

# **Groundwater Recharge Facilities Program Loan Application**

**January 10, 2001**

If you need this publication in an alternate form, contact the Division of Planning and Local Assistance at (916) 323-4510 or the Department's Office of Water Education at 1-800-272-8869.

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# Introduction

The Groundwater Recharge Program under the Safe Drinking Water, Clean Water, Watershed Protection and Flood Protection Act (Proposition 13, Water Code Division 26) authorizes the California Department of Water Resources (DWR) to issue loans to public agencies, and incorporated mutual water companies for the acquisition and construction of groundwater recharge facilities and grants for feasibility studies associated with such projects.

This application package is for the funding cycle for fiscal year 2000-2001. The California state legislature has appropriated \$9,000,000 for the current funding cycle (fiscal year 2000-2001); total commitments will not exceed \$9,000,000 during this funding cycle. Moreover, it is the intention of DWR to fund multiple projects during this funding cycle. If a proposed project is to be phased, the application needs to be completed for a stand-alone phase of the project. Any proposed financing that has not been secured, including grants and loans, shall not be considered when determining financial feasibility.

CALFED agencies, including DWR, released the Bay-Delta Program Final Programmatic EIS/EIR on July 21, 2000 and a Record of

Decision (ROD) on August 28, 2000. As described in these documents, the Bay-Delta Program includes strategies to address ecosystem health, water supply reliability, water quality, and levee system integrity. The CALFED plan will be implemented over a 30-year period and includes partnerships with local agencies and participation by a variety of stakeholder groups. CALFED agencies have concluded that expanding surface and groundwater storage capacity is critical to the successful implementation of all aspects of the CALFED Program. The Bay Delta Program Record of Decision references Proposition 13 as a source of funds for implementing new groundwater recharge projects.

This application is only for applicants seeking a construction loan for a groundwater recharge project. A separate application is to be used for applicants seeking a feasibility study grant.

Copies of the Groundwater Recharge Program construction loan application and feasibility study grant application are available on our web site at:  
<http://www.water.ca.gov/grants-loans>.

# General Instructions

## Who May Apply

Applicants must be either public agencies (cities, counties, cities and counties, joint powers authorities, or other political subdivisions of the State, or incorporated mutual water companies. Agencies that wish to collaborate on a project may elect to use a contractor-subcontractor relationship, or a joint powers authority. Contracts will only be executed with one applicant. The application needs to clearly indicate who will sign the contract and the nature of the agreement between the other participants.

## Eligible Projects

This loan program is intended to help fund projects designed to improve the conservation of water for all sectors of California through groundwater recharge facilities. Groundwater recharge facilities, as defined in the *Definitions* section of this application, are eligible for funding.

## Geographic Scope

Projects throughout California will be considered for funding.

## Conflict of Interest and Confidentiality

All participants are subject to State and federal conflict of interest laws. Failure to comply with these laws, including business and financial disclosure provisions, will result in the application being rejected and any subsequent contract being declared void. Other legal action may also be taken. Accordingly, before submitting an application, applicants are urged to seek legal counsel regarding potential conflict of interest concerns that they may have and requirements for disclosure. Applicable statutes include, but are not limited to, Government Code Section 1090, and Public Contract Code Sections 10410 and 10411 for State conflict of interest requirements.

Applicants should note that by submitting an application, they will waive their rights to the confidentiality of that application. Each application will be reviewed by DWR, CALFED, and U.S. Bureau of Reclamation staff, and members of the Conjunctive Management Advisory Committee. Once the application is signed and submitted to DWR, any privacy rights as well as other confidentiality protections afforded by law will be waived.

## How to Submit an Application

The applicant must complete and submit a completed application by 3:00 p.m., February 20, 2001. All parts of the application must be submitted at one time.

Three (3) informational application workshops will be conducted to address applicant questions. The dates and locations of the workshops are provided in the schedule on page 6.

The forms and attachments described in this application are required for a completed application. Incomplete applications will be returned to the applicant and will not be considered during this funding cycle. Appendix I (page 38) is a checklist of all the requirements for a completed application.

Please submit one original and five (5) copies of the application to:

Department of Water Resources  
Division of Planning and Local Assistance  
Post Office Box 942836  
Sacramento, California 94236-0001  
attn: Linda Buchanan Herzberg  
Telephone: (916) 327-1663

This application is for projects either ready for construction or nearing construction. If you do not have sufficient information to complete this construction loan application, consider applying for a feasibility study grant instead.

## *Schedule (anticipated dates)*

January 8, 2001	Application packages distributed to requesting parties and made available on the DWR Web site <a href="http://www.water.ca.gov/grants-loans">http://www.water.ca.gov/grants-loans</a> and on the CALFED website <a href="http://calfed.ca.gov">http://calfed.ca.gov</a>	April 13, 2001	Evaluation panel (DWR, CALFED and USBR staff) completes its evaluation of projects and prepares a list of recommended projects for submittal to the Con-junctive Management Advisory Committee
January 17, 2001	Proposition 13 Application Workshop 9:00 a.m. – 4:00 p.m., Country Suites by Ayres 1945 East Holt Boulevard Ontario, California	April 18, 2001	Advisory Committee reviews list of proposed projects and Evaluation Panel's findings and makes its recommendations
January 23, 2001	Proposition 13 Application Workshop 9:00 a.m. – 4:00 p.m., Fresno State Building 2550 Mariposa Mall, Rm 1036 Fresno California	April 30, 2001	DWR considers the rec-ommendations of the Advisory Committee, reviews the previous evaluations and makes recommendations of projects to be funded
January 26, 2001	Proposition 13 Application Workshop, 9:00 a.m. – 4:00 p.m. Chico Area Recreation and Park District 545 Vallombrosa Avenue Chico, California	May 25, 2001	Complete CALFED review
February 20, 2001	Completed applications due to DWR	May 29, 2001	Letters of commitment and contracts for selected projects drafted and sent forward for final DWR management review and approval
February 21, 2001	DWR staff begins concur-rent technical, financial, and economic assessments of threshold criteria and prepares project/program summaries and initial recommendations for ranking	June 11, 2001	Letters of commitment for selected projects mailed to applicants



# *Application Evaluation and Selection Process*

Each application will first be evaluated for completeness using the checklist contained in Appendix I (page 37). Applications that do not contain all of the attachments listed in Appendix I will be returned to the applicant and will not qualify for funding for the 2000-2001 fiscal year. Complete applications will be evaluated and scored based on the Threshold Criteria and Ranking Criteria described below. During the administration of this program and the evaluation of applications, DWR may request additional engineering, technical, financial, economic, hydrologic, geologic, hydrogeologic, soil and water quality, environmental, water rights, and legal analyses and justification. Applicants will be notified if additional documentation is required.

## **Threshold Criteria**

Applications for construction loans for groundwater recharge projects must meet all Threshold Criteria to be further evaluated for funding. The Threshold Criteria, which must be supported by documentation contained in Parts A through F of this application package, include the following:

- Part A—Organizational, Financial and Legal Eligibility
- Part B—Project Type Eligibility
- Part C—Engineering and Hydrogeologic Feasibility
- Part D—Adequacy of Plan for Completion of Environmental Documentation
- Part E—Adequacy of Protection Measures
- Part F—Consistency with CALFED Objectives (applicable only to those proposed projects potentially impacting the Bay-Delta System)

The information provided in Parts A through F will be reviewed and evaluated by DWR staff to determine if the requirements for each Threshold Criterion have been met. **Applications that do not meet the Threshold Criteria will not be evaluated further and will not qualify for funding during the 2000-2001 fiscal year.** These applications will be returned to the applicants.

## **Ranking Criteria**

Applications that meet the Threshold Criteria will be scored by an Evaluation Panel composed of DWR, CALFED, and USBR staff based on the Ranking Criteria contained in Part G. Each Ranking Criterion will be scored on a scale of 1 to 5, with 1 being "Low," 2 being "Medium/Low", 3 being "Medium," 4 being "Medium/High" and 5 being "High." The score for each criterion will then be multiplied by a weighting factor to achieve a "weighted score" for each criterion. The sum of the weighted score for each criterion will result in a total score for the application. The maximum score for this application is 55 points (see Ranking Table on page 8).

The Evaluation Panel will present the results of the Ranking Criteria scoring to a geographically diverse Advisory Committee composed of technically qualified representatives of local water agencies, environmental interests, agricultural labor interests, tribal interests, potentially impacted low-income and minority communities, and interests representing farmers who use groundwater. The Evaluation Panel will consult with the Advisory Committee to receive recommendations on the application scoring. The Evaluation Panel will consider Advisory Committee recommendations when developing a list of

## Ranking Criteria Table

Criteria	High (5)	M/H (4)	Med (3)	M/L (2)	Low (1)	Weight	Total
G-1. Benefits Distribution						1	
G-2. Groundwater Management Program						1	
G-3. Basin-wide Planning						1	
G-4 Readiness to Proceed						2	
G-5. Project Accomplishments						3	
G-6. Project Cost Effectiveness						3	
TOTAL SCORE							

recommended projects for funding. The list of recommended projects will be presented to the CALFED Management Group for review and funding recommendations to DWR. DWR will then select projects for funding.

Preparation of contracts will begin as soon as projects are approved; however, depending on the complexity of each contract and the readiness of the applicant, it may take considerable time (from two to six months) to develop and finalize the contracts for the successful applications. **For the purposes of**

**funding, applicants should not start construction work on their projects until their contracts with the State have been executed. Construction work performed before the signing of a funding agreement with the State will not be reimbursed.** Funding agreements are not final until signed by authorized representatives of the applicant and DWR.

Applications that are not selected for funding can be re-submitted during the next fiscal year.



# Part A—Organizational, financial and legal information

State of California, The Resources Agency, Department of Water Resources

A-1

## Application cover sheet

**Application for a construction loan for a groundwater recharge project under the Safe Drinking Water, Clean Water, Watershed Protection and Flood Protection Act.**

The \_\_\_\_\_  
(Exact legal name of applicant for grant)

of \_\_\_\_\_  
(Mailing address of applicant)

\_\_\_\_\_

of the County of \_\_\_\_\_, State of California, does hereby apply to  
the California Department of Water Resources for a grant in the amount of \$\_\_\_\_\_  
for construction of the following project under the Safe Drinking Water, Clean Water, Water-  
shed Protection and Flood Protection Act:

\_\_\_\_\_  
(Specify project title)

By \_\_\_\_\_ Date \_\_\_\_\_  
(Original signature of authorized representative, see Section A-5 on page 14)

\_\_\_\_\_  
(Print or type name of authorized representative)

Title \_\_\_\_\_

Telephone (\_\_\_\_) \_\_\_\_\_

Fax (\_\_\_\_) \_\_\_\_\_

E-mail \_\_\_\_\_

## A-2 Agency representatives

Project contact person:

Name \_\_\_\_\_

Title \_\_\_\_\_

Telephone (\_\_\_\_)\_\_\_\_\_

Fax (\_\_\_\_)\_\_\_\_\_

E-mail\_\_\_\_\_

Alternate contact person:

Name \_\_\_\_\_

Title \_\_\_\_\_

Telephone (\_\_\_\_)\_\_\_\_\_

Fax (\_\_\_\_)\_\_\_\_\_

E-mail\_\_\_\_\_

Type of Organization: \_\_\_\_\_

*(Water district, irrigation district, city, etc.)*

California Assembly Representative: \_\_\_\_\_

District No. \_\_\_\_\_

California Senate Representative: \_\_\_\_\_

District No. \_\_\_\_\_

Attach a copy of agency charter or enabling authority, or the mutual water company's articles of incorporation. Also provide a list of the names and titles of the agency's or company's officers.

**Mark as Attachment A-2.**

### A-3 Project cost

(1) Prepare a proposed project budget (*complete Attachment A-3 on page 12, "Project Budget—Capital Costs"; see Table A-3 on page 13 for a sample project budget; if additional details need to be provided, attach a separate page*). Contingency costs must be included in the budget. These costs must be a minimum of 15 percent for every line item.

(2) Provide financing information about the proposed project (*see below*).

**Mark as Attachment A-3.**

Total cost of project: \$ \_\_\_\_\_

Amount to be funded under the Safe Drinking Water, Clean Water, Watershed Protection and Flood Protection Act: \$ \_\_\_\_\_

Amount to be funded by the applicant: \$ \_\_\_\_\_

Indicate applicant's source of funds: \_\_\_\_\_

Amount to be funded externally: \$ \_\_\_\_\_  
(Include any other pending applications)

Lender: \_\_\_\_\_

Lender: \_\_\_\_\_

Amount: \$ \_\_\_\_\_

Amount: \$ \_\_\_\_\_

Interest Rate: \_\_\_\_\_ Percent

Interest Rate: \_\_\_\_\_ Percent

Term: \_\_\_\_\_ Years

Term: \_\_\_\_\_ Years

Annual Payment: \$ \_\_\_\_\_

Annual Payment: \$ \_\_\_\_\_

Attachment A-3 Project budget—capital costs

Capital Cost Category	Item Description	Who Will Perform Work?	Item Quantity	Unit Cost in Dollars	Extended Cost in Dollars	Contingency Cost @ 15%	Subtotals
Land Purchase/Easement							
Planning/Design/Engineering							
Materials/Installation							
Structures							
Equipment Purchases/Rentals							
Environmental Mitigation/Enhancement							
<b>PROJECT SUBTOTAL</b>							
Construction Administration & Overhead							
Legal & License Fees							
Other							
<b>TOTALS</b>							

Table A-3 Sample project budget—capital costs

Capital Cost Category	Item Description	Who Will Perform Work?	Item Quantity	Unit Cost in Dollars	Extended Cost in Dollars	Contingency Cost @ 15%	Subtotals
Land Purchase/Easement	<i>see item (5) under materials/ installation</i>						
Planning/Design/ Engineering	<i>plans, specifications, inspection</i>	<i>staff</i>	5%	\$245,000	\$245,000	\$36,750	\$281,750
Materials/Installation	(1) pipe canal (2) modify bridges (3) interties (4) recharge basin interconnections (5) new recharge basin (includes site purchase)	contractor contractor contractor contractor contractor/staff	1 lump sum lump sum lump sum 1	\$999,600 \$35,672 \$100,548 \$1,057,126 \$1,585,640	\$999,600 \$35,672 \$100,548 \$1,057,126 \$1,585,640	\$149,940 \$5,351 \$15,082 \$158,569 \$237,846	\$1,149,540 \$41,023 \$115,630 \$1,215,695 \$1,823,486
Structures	<i>not applicable</i>						
Equipment Purchases/ Rentals	<i>not applicable</i>						
Environmental Mitigation/ Enhancement	<i>not applicable</i>						
<b>PROJECT SUBTOTAL</b>					\$4,023,586	\$603,538	\$4,627,124
Construction Administration & Overhead	<i>office work, meetings, CEQA</i>	<i>staff</i>	5%	\$4,627,124	\$321,356	\$34,703	\$266,059
Legal & License Fees	<i>technical certification, contracts</i>	<i>staff counsel</i>	2%	\$4,627,124	\$92,542	\$13,881	\$106,423
Other	<i>not applicable</i>						
<b>TOTALS</b>					\$4,347,484	\$652,122	\$4,999,606

**A-4 Plat map of service area**

Provide a plat map indicating the service area responsible for project financing. Include a list of all property parcels affected by the project.

**Mark as Attachment A-4**

**A-5 Authorizing resolution**

Provide a resolution adopted by the applicant's governing body designating an authorized representative to file an application for a groundwater recharge construction loan under this program. Appendix IV (page 46) can be used as a model for this resolution.

**Mark as Attachment A-5**

**A-6 Financial statements**

Attach copies of audited financial statements for the last three fiscal years of operation. Include balance sheets, income statements, sources and uses of funds statements, and the most recent annual budget. Please provide separate detail for the water enterprise fund, if applicable to your organization.

**Mark as Attachment A-6**

**A-7 Cash reserves**

List all cash reserves (restricted and unrestricted) and any planned uses of those reserves.

**Mark as Attachment A-7**



**A-8 Existing debt**

Provide a summary of all existing long-term debt, including bonds. List any pending indebtedness (e.g., *USDA Rural Utilities Service loans, Economic Development Agency loans, or other loans*). If necessary, include additional pages.

Mark as Attachment A-8.

Lender:	Lender:	Lender:
Original Principal \$ _____	Original Principal \$ _____	Original Principal \$ _____
Purpose: _____	Purpose: _____	Purpose: _____
Original Date: _____	Original Date: _____	Original Date: _____
Original Terms:	Original Terms:	Original Terms:
Percent _____ Years _____	Percent _____ Years _____	Percent _____ Years _____
Annual Payment _____	Annual Payment _____	Annual Payment _____
Current Principal \$ _____	Current Principal \$ _____	Current Principal \$ _____
Remaining years to pay _____	Remaining years to pay _____	Remaining years to pay _____

Has this agency ever issued bonds or notes for debt? Yes ☐ No ☐  
 If yes, provide the following information for the two most recent issues:

Purpose	Purpose
(Check one) <input type="checkbox"/> General Obligation <input type="checkbox"/> Revenue Bond	(Check one) <input type="checkbox"/> General Obligation <input type="checkbox"/> Revenue Bond
Principal Amount \$ _____	Principal Amount \$ _____
Interest Rate    True interest cost <input type="text"/> Net interest cost <input type="text"/>	Interest Rate    True interest cost <input type="text"/> Net interest cost <input type="text"/>
Terms _____	Terms _____
Date of Issue _____	Date of Issue _____
Rating _____	Rating _____
Rating Agency _____	Rating Agency _____

How will the proposed project financing affect long-term and short-term financial capacity?

Provide your current debt-to-income ratio: \_\_\_\_\_ (Percent)

Provide your estimated debt-to-income ratio after proposed financing: \_\_\_\_\_ (Percent)

### A-9 Repayment method

Indicate the proposed repayment method for this loan:

- ☐ 1. Standby charges
- ☐ 2. Excess revenues

Source:

---

---

- ☐ 3. Cost savings
- ☐ 4. User fees:      ☐ Flat rate    ☐ Quantity of water used
- ☐ 5. Assessments
- ☐ 6. Other (*describe*):

---

---

If methods 1, 4, or 5 are to be used for loan repayment, include a proposed plan to divide costs among the system users. Use dollar estimates.

**Mark as Attachment A-9.**

### A-10 Loan security

Explain how the loan will be secured if required by the State (*dedicated revenues, assessments, etc.*). Cite your organization's statutory authority to use this method of loan security.

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---

Statutory Authority

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**Mark as Attachment A-10.**

**A-11 Rate and service structure**

Attach the rate structure for the last three operating years.

**Mark as Attachment A-11.**

Estimated average monthly water bill: \_\_\_\_\_

Residential  
Average month: \_\_\_\_\_

Agricultural  
Average month: \_\_\_\_\_  
(per acre-foot)

Peak month: \_\_\_\_\_ 20\_\_\_\_

Peak month: \_\_\_\_\_ 20\_\_\_\_

Total possible nonagricultural connections in service area: \_\_\_\_\_

Number of undeveloped parcels in service area: \_\_\_\_\_

Number of developed residential parcels: \_\_\_\_\_

Number of developed commercial parcels: \_\_\_\_\_

Indicate the approximate number of actual connections for the date and year listed below:

**Number of Connections**

Year/Date

Residential

Other

12/31/Current Year (CY)

12/31/CY + 1\*

12/31/CY + 2\*

12/31/CY + 3\*

12/31/CY + 4\*

*\* Projections*

Volume of water delivered through system per year: \_\_\_\_\_

**A-12 Population data** *(not needed for agricultural projects)*

Total population of service area that will repay the loan:

Year-round/Permanent: \_\_\_\_\_ As of: \_\_\_\_\_  
(Date)

Seasonal/Part-time: \_\_\_\_\_ As of: \_\_\_\_\_  
(Date)

Seasonal peak population: \_\_\_\_\_ Persons per household: \_\_\_\_\_  
(If applicable)

Source of information on population data:

\_\_\_\_\_  
\_\_\_\_\_

**Projected population:**

Current Current  
Year + 5 \_\_\_\_\_ Year + 10 \_\_\_\_\_

Source of information on projected population:

\_\_\_\_\_  
\_\_\_\_\_

**Household median income of water service area:** \$ \_\_\_\_\_

As of: \_\_\_\_\_  
(Date)

Source of information on household median income:

\_\_\_\_\_  
\_\_\_\_\_

What tax rate areas are included in the area to benefit from or pay for the project? *(This information is available from the county assessor.)*

\_\_\_\_\_  
\_\_\_\_\_

**County median income:**

*(Available from the county planning department)*

\$ \_\_\_\_\_ As of: \_\_\_\_\_  
(Date)

Source of information on county median income:

\_\_\_\_\_  
\_\_\_\_\_

**Mark as Attachment A-12.**

### A-13 Agency authority

The agency's attorney must provide a written legal opinion addressing the following six questions pertaining specifically to this funding application. The response to each question must include a citation of statutory authority or other reference.

1. Does the applicant have the legal authority to enter into a funding contract with the State of California? If so, cite the statutory authority under which the applicant may borrow funds for the purpose, amount, and duration requested.
2. What is the statutory authority under which the applicant was formed and is authorized to operate?
3. Is the applicant required to hold an election before entering into a funding contract with the State? Cite the statutory authority or other references.
4. Does the applicant have the legal authority to levy assessments and charges sufficient to repay this loan? (*Also address loan security, Part A-10, page 16.*) Cite the statutory authority or other references.

5. Will the funding agreement between the applicant and the State of California be subject to review and/or approval by other government agencies?

If yes, identify all such agencies (*e.g., Local Area Formation Commission, local governments, U.S. Forest Service, California Coastal Commission, California Department of Health Services, etc.*).

6. Describe any pending litigation that may impact the financial condition of the applicant or the operation of the water facilities. If none is pending, so state.

**Mark as Attachment A-13.**

### A-14 Operation and maintenance

Provide a summary of the operation and maintenance cost for your current water facilities. List the source of revenue to fund such costs.

Provide an estimate of operation and maintenance costs for the new or expanded facilities proposed for funding under this application and the impact of these costs on your current O&M budget.

Identify a source of funds to address any additional O&M costs.

**Mark as Attachment A-14.**

# Part B—Project Type Eligibility

## B-1 Map and narrative description of project

Provide a detailed narrative description of the proposed groundwater recharge facilities. Discuss the purpose of the project, and the project goals in the context of your agency's water management plans. If the project consists of multiple components, describe all of them and their relationship to one another. Identify which component will be funded by the requested DWR loan.

Provide a detailed map of the project area, preferably a 1:24,000 scale copy or original of a 7.5-minute USGS quad sheet. Mark the location of the project components. Identify the water source and all conveyances from the water source to the proposed project on the map.

**Mark the project description and map as Attachment B-1.**

## B-2 Legal description of project site

Provide a legal description of the project site, stating the location of the project (including county, nearest city, section number(s), township, range, base, and meridian). Include legal descriptions of beginning and ending points of the projects, if available and applicable.

**Mark as Attachment B-2.**

## B-3 Timetable

Provide a timetable showing tasks including the expected project completion date. The timetable should show the start and end dates for the project milestones. The following tasks should be included on the timetable:

- develop financing
- develop environmental documentation
- design project
- acquire rights of way
- acquire water rights or water supply
- acquire all necessary permits
- begin construction
- implement environmental mitigation or enhancement

The timetable should preferably be in a horizontal bar-chart format. Tasks may overlap.

**NOTE:** If the proposed project is to be phased, expand the project timetable to include all of the necessary information for each phase. Successful applicants will be contractually obligated to complete all project phases that comprise the overall project scope on which DWR's findings of eligibility are based. For a given project, this requirement applies equally, whether it is funded solely by a DWR groundwater recharge construction loan or from combined sources including the DWR loan.

**Mark as Attachment B-3.**



# ***Part C—Engineering and Hydrogeologic Feasibility***

The facility must be feasible from a hydrogeologic standpoint and an engineering standpoint. The information requested in Sections C-1 through C-9 will be used by DWR to confirm that the proposed groundwater recharge facilities are feasible from a hydrogeologic and engineering standpoint. Provide references for all sources of information provided in Part C.

## **C-1 Certification statements**

Certification statements regarding project feasibility must be signed by a California registered geologist and a California registered civil engineer working on this project. The statements are found in Appendix II (pages 39 and 40). Cite the references (such as feasibility studies, engineering design studies, hydrologic studies and water rights permits, or contracts) used to determine feasibility.

**Mark certification statements and citation of reference sources as Attachment C-1.**

## **C-2 Water source**

Identify the source of water to be used for groundwater recharge. Attach documentation showing that the applicant has water rights, a contract, or an agreement for use of the water proposed for recharge. Water rights documentation should include a description of the type, duration, quantity, place of use and date when water rights were obtained. If there are any questions concerning water rights, contact the State Water Resources Control Board, Division of Water Rights, at (916) 657-2170. If water is to be acquired

through a purchase contract or other agreement, the contract period and terms of the contract must be clearly described and a copy of the agreement included in Attachment C-2.

**Mark as Attachment C-2.**

## **C-3 Water availability**

Calculate the volume of water available to the groundwater recharge facility for each year during the life of the project. The life of the project is assumed to be 50 years unless otherwise indicated. Hydrologic data from as early as possible to the most recent data available should be used to calculate the amount of water obtainable for the project. At a minimum, the hydrologic record for the most recent 50-year period must be used to calculate the water available to the groundwater recharge project. Cite the sources for all the data. If data are not available, applicants should synthesize data for the most recent 50-year historical period, using a technically acceptable synthesis technique. **Discuss the methods and assumptions used to synthesize data.**

If water is to be conveyed to the project through a pipeline or canal used for another purpose, demonstrate that conveyance capacity exists for operation of the groundwater recharge facility as proposed in this application. Conveyance capacity should include information about the appropriate timing of water deliveries to ensure operation of the groundwater recharge facility as proposed in this application.

Calculate and incorporate other losses between the water source diversion and the groundwater recharge facility such as conveyance losses and evaporation.

**NOTE:** Complete Table C-3, titled "Project recharge and extraction budget." Table C-3 is located at the end of Part C. Be sure to state the starting year. In Table C-3, for direct recharge projects, enter acre-feet of water recharged per year in column (a). For in-lieu projects, enter estimates of additional surface deliveries to areas currently using groundwater in column (b). For both types of projects, enter project water extracted in column (d), and enter calculated net recharge in column (e)

If supply water for the project is to be purchased or acquired through an agreement with another entity, the projected average annual supply of purchased water (minus conveyance losses) should be entered into row (a) of Table 1 "Project performance" in Appendix III on page 41. If project operations (recharge or extraction) will vary year-to-year, then use Table C-3, "Project recharge and extraction budget."

**Mark the water availability analysis (including discussion of methods and assumptions and Table C-3) as Attachment C-3.**

#### **C-4 Aquifer parameters**

Identify and describe the groundwater basin that will be recharged by this facility. Provide and/or reference the sources of all information:

1. Show the areal extent of the groundwater basin or sub-basin on a map of appropriate scale, and show the depth of the basin and location of the aquifer. Provide as many cross sections as necessary to adequately demonstrate the geometry of the aquifer. Cross sections must include soil stratigraphy based upon boreholes trenches monitoring wells or other sup-

porting information. Describe the hydraulic conditions of the target aquifer (i.e., confined, unconfined, or semi-confined).

2. Describe the geology of the aquifer including the stratigraphy, structure, geomorphology, and any potential geologic hazards or contaminants. Supporting documentation may include but is not limited to sample collection and laboratory analysis (particle size distribution) of the target aquifer materials, surface and borehole geophysical methods and/or logs, geologic mud logs and/or driller's logs.
3. Identify on a map where the water recharged by this facility will be stored and locate the significant wells.
4. Provide the semi-annual water levels referenced to mean sea level for the period of 1970-2000 or as data availability allows for representative areas of the basin including the project location. Use hydrographs, contour maps and other descriptive materials that demonstrate important groundwater level information.
5. Provide the storativity of the aquifer and the volume of storage space available for recharge.
6. Predict the maximum and long-term (rate during a period of average water supply) rates of groundwater recharge of the proposed facility, in acre-feet per year.
7. Provide values for transmissivity and hydraulic conductivity of the aquifer and estimate the effect of recharge on water levels in the aquifer.
8. Show that the facility can recharge the volume of water available (the amount described in Sections C-2 and C-3) using the information developed in this section. Include an estimation of the volume of recharged water that will be available for recovery. Identify loss rates to basin outflow, rejected natural recharge, discharge to surface water, and other losses.

9. Provide the volume of groundwater currently extracted and consumed annually within the boundaries of the applicant, agency, or service area of the proposed project.
10. Quantify and discuss the yields typically provided by wells in the subject groundwater basin and explain how the project will extract the quantity of water that is expected.
11. Determine if the groundwater recharge project will have an effect on aquifers in adjacent basins, and if so, explain how the effects will be mitigated in Section E-3.
12. Determine the equilibrium infiltration rate of direct groundwater recharge for any proposed settling basins.
13. Discuss whether there are multiple aquifers in the basin, and demonstrate that the proposed groundwater recharge facility will recharge the targeted aquifer.

**Mark the description of recharge and aquifer characteristics as Attachment C-4.**

### **C-5 Water quality**

Determine the potential water quality impacts that will result from operation of the proposed groundwater recharge facility over the 50-year life of the project. Determine the project's impacts on existing water quality concerns in the aquifer. (Overdraft, saline water intrusion, and other concerns should be discussed in Section C-6.)

Document the baseline water quality concerns, including, well logs as contaminant concentration time series plots, and other pertinent water quality data. Provide information regarding current and past water quality problems that have occurred within the groundwater basin including a current status and description of mitigation methods and their performance. If contaminants are or have been present in the aquifer, provide a

description of contaminant concerns (MTBE, pesticides, nitrates, chromium, etc.). Provide cross sections and concentration contour maps showing the lateral and vertical extent of groundwater contaminants when appropriate and their relation to the proposed targeted aquifer(s) for groundwater recharge. If cross sections and contour maps are not available, provide information showing changes in contaminant concentration over time using contour maps and/or time series plots using data from that are representative of contaminant trends within the groundwater basin. Discuss the trends shown by these records. If treatment of the groundwater is required after extraction describe how treatment will be performed.

What impacts are expected to occur to existing water quality in the target aquifer(s) due to proposed recharge? Will the source water adversely impact the quality of the groundwater? Will changes in the aquifer occur due to the use of the designated source water as recharge water? Have the appropriate State and local agencies approved the proposed water for recharge into the target groundwater aquifer(s)? Provide chemical analysis of the proposed recharge water and the existing groundwater quality with respect to all regulated parameters for its intended use including pathogen analysis. If the target aquifer(s) are a drinking water source, demonstrate that the recharge water meets water quality objectives as specified in State and Regional Board's Water Quality Control Plans. If treatment of the source water is required before recharge, describe how treatment will be performed.

What mitigation measures will need to be taken to assure that water quality or recharge ability does not degrade over the life of the project? Consider factors such as reduction of infiltration rates, chemical precipitation of

solids, growth of algae, and bacterial biomass. Discuss how these effects will be prevented or mitigated and integrate these comments with Section E-3. Use water quality analyses of the source water and intended aquifer to document your answer to this question.

**Mark water quality discussion as Attachment C-5.**

**C-6 Overdraft, saline water intrusion, and other concerns**

For the purpose of this application, the information provided in Sections C-6a to C-6c will be used to evaluate the likely effect the proposed groundwater recharge facility will have on overdraft conditions, saline water intrusion, and other concerns.

**C-6a Overdraft reduction**

Determine the effects on overdraft reduction that will result from operation of the proposed groundwater recharge facility over the 50-year life of the project. Describe problems in the target groundwater basin that are a result of overdraft. Describe how the proposed facility will help mitigate those problems.

Provide groundwater level maps showing how groundwater storage in the basin has changed over time. What changes in overdraft will occur from the operation of the proposed project? If maps are not available, attach hydrographs of wells that are representative of water level trends. Discuss the trends shown by these records.

**Mark overdraft reduction discussion as Attachment C-6a.**

**C-6b Saline concentration trends**

Determine the saline water concentration trends that will result from operation of the proposed groundwater recharge facility over

the 50-year life of the project. Describe problems in the target groundwater basin that are a result of saline water intrusion. Describe how the proposed facility will help mitigate those problems. Provide information showing changes in saline concentration over time using contour maps and/or time series plots (hydrographs) using data from wells that are representative of saline concentration trends within the groundwater basin. Discuss the trends shown by these records.

**Mark saline concentration trends discussion as Attachment C-6b.**

**C-6c Other concerns**

Determine other problems associated with groundwater extraction and recharge such as locations of subsidence, known cones of depression, mounding patterns, liquefaction, flooding, and landslides. If the target groundwater basin is located in part or entirely within an area indicated as having the potential for liquefaction, landslides or other ground failure during a seismic event as indicated by Seismic Hazard Mapping Act, California Public Resources Code, Division 2. Geology, Mines and Mining, Chapters 7.8, section 2691( c ). Discuss the effects these concerns might have on a groundwater recharge project. Consider past problems, design concerns associated with the proposed project, and future problems caused by the proposed project.

**Mark other concerns as Attachment C-6c.**

**C-7 Project reports and previous studies**

Provide a copy of all reports and studies prepared for the proposed groundwater recharge facilities. If a feasibility study has not been completed for the project, explain what has been done to determine the project's feasibility.

**Mark as Attachment C-7.**

### **C-8 Preliminary project plans and specifications**

Provide a copy of preliminary project plans indicating type of construction, types and quantities of materials, dimensions, cross-sectional drawings, profile drawings, location, elevation (if available), planned mitigation measures (if required), and other appropriate features. The preliminary plans need to be at least a 30 percent plan drawing. Provide a copy of preliminary project specifications, including citations of all standards used and all applicable health and safety specifications such as OSHA standards and applicable building codes (such as Uniform Building Codes).

A California registered civil engineer must prepare the preliminary plans and specifications. A California registered civil engineer must prepare and sign the final plans and specifications. Each final plan sheet and the cover sheet of the final specifications must be signed and stamped by a California registered civil engineer.

**Mark the preliminary plans and specifications as Attachment C-8.**

### **C-9 Construction inspection plan**

Provide a detailed construction inspection plan describing who will inspect the site and project before, during, and after construction, and when inspections will be made.

**Mark as Attachment C-9.**



**Table C-3. Project recharge and extraction budget**

<b>Year</b>	<b>Direct Recharge (AF)</b>	<b>Surface Water Deliveries for In-Lieu Recharge (AF)</b>	<b>Total Recharge (AF)</b>	<b>Project Extraction (AF)</b>	<b>Net Project Recharge (AF)</b>
	<b>(a)</b>	<b>(b)</b>	<b>(c) (a + b)</b>	<b>(d)</b>	<b>(e) (c - d)</b>
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
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26					



**Table C-3 (continued)**  
**Project recharge and extraction budget**

<b>Year</b>	<b>Direct Recharge (AF)</b>	<b>Surface Water Deliveries for In-Lieu Recharge (AF)</b>	<b>Total Recharge (AF)</b>	<b>Project Extraction (AF)</b>	<b>Net Project Recharge (AF)</b>
	<b>(a)</b>	<b>(b)</b>	<b>(c)</b> <b>(a + b)</b>	<b>(d)</b>	<b>(e)</b> <b>(c - d)</b>
<b>27</b>					
<b>28</b>					
<b>29</b>					
<b>30</b>					
<b>31</b>					
<b>32</b>					
<b>33</b>					
<b>34</b>					
<b>35</b>					
<b>36</b>					
<b>37</b>					
<b>38</b>					
<b>39</b>					
<b>40</b>					
<b>41</b>					
<b>42</b>					
<b>43</b>					
<b>44</b>					
<b>45</b>					
<b>46</b>					
<b>47</b>					
<b>48</b>					
<b>49</b>					
<b>50</b>					

**Table C-3 (continued)**  
**Project recharge and extraction budget**

<b>Year</b>	<b>Direct Recharge (AF)</b>  <b>(a)</b>	<b>Surface Water Deliveries for In-Lieu Recharge (AF)</b>  <b>(b)</b>	<b>Total Recharge (AF)</b>  <b>(c)</b>  <b>(a + b)</b>	<b>Project Extraction (AF)</b>  <b>(d)</b>	<b>Net Project Recharge (AF)</b>  <b>(e)</b>  <b>(c - d)</b>
<b>51</b>					
<b>52</b>					
<b>53</b>					
<b>54</b>					
<b>55</b>					
<b>56</b>					
<b>57</b>					
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<b>68</b>					
<b>69</b>					
<b>70</b>					
<b>71</b>					
<b>72</b>					
<b>73</b>					
<b>74</b>					
<b>75</b>					
<b>Average Annual Amounts (AF) (1)</b>					

(1) Insert values into Table 1—Project Performance in Appendix III on page 42.

# *Part D—Adequacy of Plan for Completion of Environmental Documentation*

Environmental issues are often complex and sometimes require considerable time and expense to resolve adequately. Although DWR will evaluate, rank, and select projects for funding prior to completion of appropriate environmental documentation, all such documentation must be completed before DWR will enter into contracts for selected projects or disburse any grant funds.

The application must include a plan for compliance with all applicable environmental documentation. The plan should address all the potential environmental, social and economic impacts of the proposed project required under the California Environmental Quality Act (CEQA) and, if appropriate, the National Environmental Policy Act (NEPA). The plan must identify all predictable adverse impacts associated with the proposed project and describe the measures that will be taken to avoid or mitigate these impacts.

## **D-1 CEQA and NEPA**

For complete information on the CEQA process, applicants may request a copy of the California State Clearinghouse Handbook by calling (916) 445-0613 or by submitting a written request to:

The State of California  
Governor's Office  
Office of Planning and Research  
1400 Tenth Street  
Sacramento, CA 95814

If the proposed project is subject to federal jurisdiction, NEPA requirements may apply. In this case, compliance with NEPA must also be demonstrated.

In order to rank projects for funding the applicant must submit to DWR the following items:

- A detailed plan for compliance with all applicable environmental laws.
- A schedule for completion of all appropriate environmental documentation.
- The attached Environmental Impact Checklist in Appendix V (pages 47 through 56) completed using available information. If an Initial Study has been prepared for the project, provide a copy of the checklist accompanying that document.

Applicants that have not initiated their environmental documentation are strongly encouraged to conduct their Initial Studies or Environmental Assessments as soon as possible. Applicants already in the process of preparing their CEQA/NEPA documentation need to inform DWR of the current status of that documentation, and provide a description of the documentation that has been completed. Applicants who have completed their CEQA/NEPA documentation need to provide DWR with copies of the appropriate documentation, including the recorded Notice of Determination.

**Mark the Plan, Schedule and Appendix V or the Initial Study checklist, if applicable, as Attachment D-1.**

## **D-2 Demonstration of community support and/or opposition**

Submit copies of any letters from local environmental organizations, community groups, political bodies, as well as newspaper articles demonstrating support for the proposed project.

Describe any opposition to the proposed project. Identity the party(ies) in opposition, and briefly discuss the situation.

**Mark as Attachment D-2.**

## **D-3 Consistency with CALFED Bay-Delta Program Final Programmatic Environmental Impact Statement and Report (EIS/EIR)**

For projects that fall within the CALFED preferred program alternative, applicants may tier from the CALFED Final Programmatic EIS/EIR. Applicants should indicate whether the planned environmental documentation for the proposed project will tier off the CALFED Final Programmatic EIS/EIR and if not, whether the planned environmental documentation will be consistent the CALFED Final Programmatic EIS/EIR.

Describe any mitigation measures from the list provided in Appendix A of the CALFED Record of Decision (ROD) that may be included in the CEQA/NEPA documentation (See Appendix VII, pages 61 through 81, for this list). For more information concerning tiering from the CALFED Final Programmatic EIS/EIR and/or developing associated mitigation strategies, contact Chuck Vogelsang at (916) 653-2536 or [chuckv@water.ca.gov](mailto:chuckv@water.ca.gov)

**Mark as Attachment D-3.**

## **D-4 Permits, easements, licenses, acquisitions, and certifications**

List all required permits, easement rights, licenses, land acquisitions, and certifications of approval of federal, State, and local agen-

cies that may be required for the proposed project. If the proposed project will require Section 404 permits, or streambed alteration permits, address this in the plan for CEQA/NEPA compliance.

If the proposed project will involve or impact a reservoir or dam of any dimension, the applicant will be required to obtain a DWR Safety of Dams Certificate of Approval or a Statement of Exemption. If you have questions on dam safety, call DWR's Division of Safety of Dams at (916) 445-7606.

Submit a plan and schedule for obtaining permits required for the proposed project. (See Appendix VI on page 57 through 60 for a list of possible required permits.)

**Mark as Attachment D-4.**

## **D-5 Local land use plans**

Provide a listing of all relevant local land use or general plans and description of how the proposed project fits within those plans.

**Mark as Attachment D-5.**

## **D-6 State and local statutes and regulations**

Provide a list of all other federal, State and local statutes, and regulations governing the proposed project, including any applicable local surface water and groundwater ordinances and evidence of, or a plan for, compliance.

**Mark as Attachment D-6.**

## ***Part E—Adequacy of Protection Measures***

The applicant will be required to demonstrate that appropriate issues have been addressed and sufficient measures are in place to protect local landowners, and others, including low-income and minority communities, from potential impacts associated with the proposed groundwater recharge facilities. The information requested in Sections E-1 through E-4 will be used to confirm that these protection measures have been adequately addressed.

### **E-1 Protection and preservation of water rights**

Describe the potential impacts the project may have on the water rights of landowners and water users including low-income and minority communities. This description should include documentation that the project will be designed and operated in a manner that ensures other water users of the same or hydrogeologically related aquifer will not suffer any unreasonable diminution of the quantity or quality of their groundwater supplies or incur additional uncompensated expense as a result of the implementation of the project.

**Mark as Attachment E-1.**

### **E-2 Groundwater monitoring and mitigation**

Provide a detailed narrative description of the proposed groundwater monitoring plan, including the number, locations and construction details for all groundwater monitoring wells that are part of the proposed project. Include descriptions regarding the frequency of monitoring and the data management

system that will be used to organize the groundwater data collected. Also, provide a detailed mitigation plan that will be implemented to address potential impacts to groundwater levels and groundwater quality caused by project operations. The monitoring and mitigation plan must continue for the life of the project.

Provide a project maintenance schedule including concerns such as dust control and mosquito abatement. Describe how infiltration rates will be maintained over the life of the project, consider factors such as biomass buildup, biofouling.

**Mark as Attachment E-2.**

### **E-3 Extraction limitation**

Provide documentation that project operations will limit extraction of groundwater to not more than the amount of water that is stored or recharged by the project participants, or the amount that complies with all laws and contract terms governing the extraction, appropriation, and use of groundwater by the project participants.

**Mark as Attachment E-3.**

### **E-4 Agricultural land protection**

Describe the land surrounding the project. If any of the land is agricultural and will be taken out of production as a result of the construction project, provide documentation of the existing agricultural use (e.g., orchard, row crop, pasture). Also, provide a detailed monitoring and mitigation plan that will be implemented to address potential impacts to existing agricultural land caused by project operations.

**Mark as Attachment E-4.**

# *Part F—Consistency with CALFED Objectives*

The June 9, 2000 execution of the Framework Agreement between California Governor Gray Davis and U.S. Interior Secretary Bruce Babbitt, and the subsequent August 28, 2000 adoption of the Bay-Delta Program Record of Decision for the Stage 1 actions of the CALFED Bay-Delta Program, clearly and expressly set forth both State and federal public policy for the protection and improvement of the waters of the Bay-Delta estuary. Insofar as implementation of Chapter 8 of Proposition 13 affects the estuary, the principals of public policy that govern the program must include consistency with the CALFED Program. For this reason, the implicit public policy framework of Chapter 8 for Groundwater Recharge now coincides with the explicit policy framework of Chapter 9 Groundwater Storage. In both cases, consistency with the CALFED Bay-Delta Program is required for those projects or feasibility studies funded under the programs, if the proposed projects have the potential to impact the Bay-Delta system.

CALFED developed the following objectives for a solution to the Bay-Delta issues:

- Provide good water quality for all beneficial uses.
- Improve and increase aquatic and terrestrial habitats and improve ecological functions in the Bay-Delta to support sustainable populations of diverse and valuable plant and animal species.
- Reduce the mismatch between Bay-Delta water supplies and current and projected

beneficial uses dependent on the Bay-Delta system.

- Reduce the risk to land use and associated economic activities, water supply, infrastructure and the ecosystem from catastrophic breaching of Delta levees.

One of CALFED's goals is to facilitate and fund locally supported, managed and controlled groundwater and conjunctive management projects through the Integrated Storage Investigations (ISI) Program being implemented by DWR. It is CALFED's intent to support voluntary, locally controlled groundwater projects that are designed to address local water needs first, before considering regional or State-wide benefits. As a result, the ISI Program developed the following Principles of Implementation:

- Local planning process
- Local control of proposed projects
- Voluntary implementation of projects
- Priority for in-basin water needs
- Compensation for out-of-basin transfers
- Basin-wide planning and monitoring.

**Projects having the potential to impact the Bay-Delta system must be consistent with the plans and recommendations proposed by CALFED to be eligible for funding.**

**Consistency with CALFED plans and recommendations is not required for projects that do not have the potential to impact the Bay-Delta system.**



If appropriate, provide a narrative that clearly explains why the proposed project does not have the potential to impact the Bay-Delta system.

If the project has the potential to impact the Bay-Delta system, provide a detailed narrative description of how the proposed project

is consistent with the plans and recommendations proposed by CALFED, with particular emphasis on increasing flows or reducing demands from the Bay-Delta system during dry years.

**Mark as Attachment F.**

# Part G—Ranking Criteria

The information provided in Part G will be used to score applications that meet all of the Threshold Criteria contained in Parts A through F. Each Ranking Criterion will be scored on a scale of 1 to 5, with 1 being "Low," 2 being "Medium/Low", 3 being "Medium," 4 being "Medium/High" and 5 being "High." The score for each criterion will then be multiplied by a weighting factor to achieve a "weighted score" for each criterion. The sum of the weighted score for each criterion will result in a total score for the application (maximum of 55 points per application; see the Ranking Criteria Table on page 8). The total score for each application, along with recommendations from the Advisory Committee and CALFED Management Group, will be used by DWR to select projects for funding as described in the section entitled "Application Evaluation and Selection Process" of this application package.

**Applicants are limited to a two-page summary for each of the following Ranking Criterion.** Additional supporting documentation beyond the two-page limit may be submitted as appendices to the application.

## G-1 Benefits distribution

Provide a general description of the benefits to water supply and environmental uses. Applications demonstrating both water supply benefits to water users and environmental uses will score "High." Applications with little or no benefits will score "Low." Those in between will score "Medium/High", "Medium", or Medium/Low."

**Mark as Attachment G-1.**

## G-2 Groundwater management program

Provide a summary narrative of the agency's

groundwater management program and its relation to the proposed project. Include a list of activities provided for under the groundwater management program and the status of each activity. Also include a list of agencies and other entities that participated in the development and/or implementation of the program.

Applicants that demonstrate an effective groundwater management program that includes or allows for the proposed groundwater recharge project will score "High." Applicants that have adopted a groundwater management program but cannot demonstrate implementation of significant program activities will score "Medium." Applicants that have not adopted a groundwater management program will score "Low." Those in between will score "Medium/High" or "Medium/Low"

**Mark as Attachment G-2.**

## G-3 Basin-wide planning

Provide a detailed narrative description of how the proposed project fits into plans for the entire groundwater basin or sub-basin. Include a description of how the applicant has or plans to seek the involvement and input from other stakeholders including potentially impacted low-income and minority communities, and tribes overlying or using the groundwater basin. Stakeholder and tribal involvement can be demonstrated through a written summary of stakeholder and tribal involvement activities and agreements reached, supported by the following that can be attached as an appendix:

- Any Memorandums of Understanding (MOUs)

- Chronology of meetings, briefings, etc.
- Meeting minutes
- Published notices of public meetings and sign-in sheets
- Meeting invitations/agendas mailed to potential stakeholders including potentially impacted low-income and minority communities, and tribes
- News articles or television coverage
- Fact sheet mailers to affected citizens
- Written letters of support
- Written consensus statement signed by stakeholders including potentially impacted low-income and minority communities, and tribes

Be sure to include in the description how local agencies whose jurisdiction or water service area overlies or is adjacent to the aquifer utilized to store water will be involved in the project.

Applicants will score "High" on this criterion if they have completed or participated in a basin-wide planning effort that includes the proposed project. Applicants will score "Medium/High" if basin-wide planning is near completion. Applicants will score "Medium" if basin-wide planning efforts are underway. Applicants will score "Medium/Low" if basin-wide planning is just getting started. Projects that are not part of a basin-wide planning effort will score "Low."

**Mark as Attachment G-3.**

#### **G-4 Readiness to proceed with the project**

Assuming the project is selected for funding by June 11, 2001, and taking into consideration completion of all required environmental documentation and completion of final plans and specifications, indicate the expected construction start date:

\_\_\_\_\_ Within six months from the date funded

\_\_\_\_\_ Within nine months from the date funded

\_\_\_\_\_ Within one year from the date funded

\_\_\_\_\_ Within 15 months from the date funded

\_\_\_\_\_ Greater than 15 months from the date funded - Specify the number of months until construction is anticipated to begin: \_\_\_\_\_

Applicants that are ready to begin construction within six months will be scored "High" for this criterion; within nine months will be scored "Medium/High"; within one year will be scored "Medium"; within 15 months will be scored "Medium/Low"; and greater than 15 months would be scored "Low."

**Mark as Attachment G-4.**

#### **G-5 Project accomplishments**

Projects with considerable expected quantifiable accomplishments combined with well-defined expected non-quantifiable accomplishments based on the use of well-documented and credible analytical methods will be scored "High." Projects with few or poorly described expected quantifiable accomplishments combined with vaguely defined expected non-quantifiable accomplishments based on the use of minimally documented and least defensible analytical methods will be scored "Low." All others will be scored in between. Descriptions of quantifiable accomplishments and non-quantifiable accomplishments are provided below.

Appendix IX (page 86) provides a detailed explanation of the information that should be provided to document expected project accomplishments.

**Mark as Attachment G-5**

#### **G-6 Project cost effectiveness**

Projects with considerable quantified accomplishments combined with well-defined non-

quantifiable accomplishments compared to their quantifiable and non-quantifiable costs and based on the use of well-documented and credible analytical methods will be ranked "High." Projects with inconsiderable quantified accomplishments combined with vaguely defined non-quantified accomplishments compared to their quantifiable and non-quantifiable costs and based on the use of minimally documented and least defensible analytical methods will be ranked "Low." Proposed projects that fall between these two situations will score "Medium/High," "Medium," or "Medium/Low."

The local quantifiable cost information developed for Appendix IX, G-5a(1) will be used for determining project cost effectiveness.

In addition to this information, report any quantifiable costs that may accrue to parties not directly participating in the proposed project as beneficiaries but which may be affected by hydrologic changes related to project implementation (e.g., streamflow, water quality) anywhere in the system.

Any expected costs associated with project implementation that cannot be assigned a numerical value, either in dollars or in specific physical quantities, should be described as completely as possible.

**Mark as Attachment G-6.**

# Appendix I—Checklist of attachments

Complete this checklist to confirm all sections and attachments to this application package have been completed.

## Part A

- \_\_\_\_\_A-1 Application cover sheet
- \_\_\_\_\_A-2 Applicant representatives
- \_\_\_\_\_A-3 Project costs
- \_\_\_\_\_A-4 Plat map of service area
- \_\_\_\_\_A-5 Authorizing Resolution
- \_\_\_\_\_A-6 Financial Statements
- \_\_\_\_\_A-7 Cash Reserves
- \_\_\_\_\_A-8 Existing debt
- \_\_\_\_\_A-9 Repayment method
- \_\_\_\_\_A-10 Loan security
- \_\_\_\_\_A-11 Rate service structure
- \_\_\_\_\_A-12 Population data
- \_\_\_\_\_A-13 Applicant authority
- \_\_\_\_\_A-14 Operation and maintenance

## Part B

- \_\_\_\_\_B-1 Map and narrative description of project
- \_\_\_\_\_B-2 Legal description of project site
- \_\_\_\_\_B-3 Timetable

## Part C

- \_\_\_\_\_C-1 Engineering feasibility certification statement (Appendix II)
- \_\_\_\_\_C-1 Hydrogeologic feasibility certification statement (Appendix II)
- \_\_\_\_\_C-2 Water source

- \_\_\_\_\_C-3 Water availability
- \_\_\_\_\_C-3 Citation of data source
- \_\_\_\_\_C-3 Discussion of hydrologic data synthesis
- \_\_\_\_\_C-3 Project recharge and extraction budget (Table C-3)
- \_\_\_\_\_C-4 Aquifer parameters
- \_\_\_\_\_C-5 Water quality
- \_\_\_\_\_C-6 Overdraft, saline water intrusion, and other concerns
  - \_\_\_\_\_C-6a Overdraft reduction
  - \_\_\_\_\_C-6b Saline concentration trends
  - \_\_\_\_\_C-6c Other concerns
- \_\_\_\_\_C-7 Project reports and previous studies
- \_\_\_\_\_C-8 Preliminary project plans and specifications
- \_\_\_\_\_C-9 Construction inspection plan

## Part D

- \_\_\_\_\_D-1 CEQA/NEPA documentation (Appendix V)
- \_\_\_\_\_D-2 Demonstration of community support and/or opposition
- \_\_\_\_\_D-3 Consistency with CALFED Bay-Delta Program final programmatic EIS/EIR
- \_\_\_\_\_D-4 Permits, easements, acquisitions, license, and certifications (Appendix VI)
- \_\_\_\_\_D-5 Local land use plans
- \_\_\_\_\_D-6 State and local statutes and regulations

## Part E

- \_\_\_\_\_E-1 Protection and preservation of water rights
- \_\_\_\_\_E-2 Groundwater monitoring and mitigation
- \_\_\_\_\_E-3 Extraction limitation
- \_\_\_\_\_E-4 Agricultural land protection

**Part F**

- \_\_\_\_\_F-1 Consistency with CALFED Objectives

**Part G**

- \_\_\_\_\_G-1 Distribution of the benefits to water supply and the environment
- \_\_\_\_\_G-2 The existence of a groundwater management program in the area impacted by the project
- \_\_\_\_\_G-3 Basin-wide planning, stakeholder and tribal involvement
- \_\_\_\_\_G-4 Readiness to proceed with the project

- \_\_\_\_\_G-5 Project accomplishments
- \_\_\_\_\_G-5a Quantifiable accomplishments (Appendix IX)
- \_\_\_\_\_G-5a(1) Local accomplishments (Appendix IX)
- \_\_\_\_\_G-5a(1)(i) Analysis assumptions (Appendix IX)
- \_\_\_\_\_G-5a(1)(ii) Project performance (Appendix IX and Appendix III, Table 1)
- \_\_\_\_\_G-5a(1)(iii) Project costs (Appendix IX and Appendix III, Tables 2 through 7)
- \_\_\_\_\_G-5a(2) Non-local accomplishments (Appendix IX)
- \_\_\_\_\_G-5b Non-quantifiable accomplishments (Appendix IX)
- \_\_\_\_\_G-6 Project cost effectiveness

# Appendix II

## Certification statements

### *Engineering feasibility statement*

I, \_\_\_\_\_, a California registered civil engineer, have reviewed the information presented in support of this application. Based on this information, and any other knowledge I have regarding the proposed project, I find that it can be designed, constructed, and operated to accomplish the purpose for which it is planned. There is a sufficient water supply for the project. The information I have reviewed to document this statement is included (*provide list, e.g., feasibility studies, engineering design studies, water rights permits, etc.*).

---

(Original signature and stamp with expiration date)



# Appendix II

## Certification statements

### *Hydrogeologic feasibility statement*

I, \_\_\_\_\_, a California registered geologist, have reviewed the information presented in support of this application. Based on this information and any other knowledge I have regarding the proposed project, I find that water will percolate and/or be injected into the aquifer(s) intended for recharge. Based on data available for review, I also find that the water quality of the recharge water complies with all applicable regulatory standards related to aquifer(s) recharge. The information I have reviewed to document these statements are included (*provide list, e.g., feasibility studies, geologic, geographical and/or hydrogeologic studies, etc.*)

---

(Original signature and stamp with expiration date)

# Appendix III

## Local benefit/cost analysis—groundwater recharge

**Table 1—Project performance**

(a)	Average Annual Direct Recharge (AF) (1)	
(b)	Average Annual In-Lieu Recharge (AF)	
(c)	Average Annual Total Recharge (AF) $(a + b)$	
(d)	Average Annual Extractions (AF)	
(e)	Average Annual Net Recharge (AF) $(c - d)$	

(1) All of these numbers are from Section C-3.

**Table 2—Capital costs**

	Capital Cost Category (a)	Cost (b)	Contingency Costs		Subtotal (e) $(b + d)$
			Percent (c)	Dollars (d) $(b \times c)$	
(a)	Land Purchase/Easement		0.15		
(b)	Planning/Design/Engineering		0.15		
(c)	Materials/Installation		0.15		
(d)	Structures		0.15		
(e)	Equipment Purchases/Rentals		0.15		
(f)	Environmental Mitigation/ Enhancement		0.15		
(g)	Construction Administration/ Overhead		0.15		
(h)	Project Legal/License Fees		0.15		
(i)	Other		0.15		
(j)	Total (1) $(a + \dots + i)$				

(1) Must match Project Budget prepared in Section A-3.

**Table 3—Annual operations and maintenance costs**

Annual Administration (a)	Annual Operations (b)	Annual Maintenance (c)	Annual Water Purchases (d)	Annual Extractions (1) (e)	Annual Other (f)	Total Annual O&M Costs (g)  (a + ... + f)	Total Discounted O&M Costs (2) (h)  (g x 15.7)

(1) Agency and/or customer costs to withdraw water from groundwater basin.

(2) Total percent value of O&M costs over a 50-year period with discount rate of 6 percent.

**Table 4—Total cost summary**

Capital Costs (1)  (a)	Discounted O&M Costs (2)  (b)	Total Discounted Costs  (c)  (a + b)

(1) From Table 2, row (j).

(2) From Table 3, column (h).

**Table 5—Water supply benefits****5a—Avoided costs of current supply sources**

Supply Sources (a)	Cost of Water (\$/AF) (b)

## 5b—Alternative costs of future supply sources

Future Supply Sources (a)	Total Capital Costs (\$) (b)	Capital Recovery Factor (1) (c)	Annual Capital Costs (\$) (d) <i>(b x c)</i>	Annual O & M Costs (\$) (e)	Total Annual Costs (\$) (f) <i>(d + e)</i>	Annual Supply (AF) (g)	Annual Cost (\$/AF) (h) <i>(f / g)</i>
		.0634					
		.0634					
		.0634					
		.0634					
		.0634					

(1) 6 percent discount rate; 50 years.

## 5c—Water sales revenue (*vendibility*)

Parties Purchasing Project Supplies (a)	Amount of Water to be Sold (1) (AF) (b)	Projected Selling Price (\$/AF) (c)	Expected Frequency of Sales (2) (%) (d)	Actual Sales Revenue (\$/AF) (e) <i>(c x d)</i>	"Option" Fee (3) (\$/AF) (f)	Total Sales Revenue (\$/AF) (g) <i>(e + f)</i>

- (1) Maximum amount of water available to be sold per year; must not exceed amount shown in Table 1, row (d).
- (2) During the 50-year analysis period, what percentage of years are water sales expected to occur? For example, if water will only be sold half of the years, enter 0.5.
- (3) "Option" fees are sometimes paid by a contracting agency to a selling agency to maintain the right of the contracting agency to buy water whenever needed. Although the water may not be purchased every year, the fee is usually paid every year.

**Table 5d—Total water supply benefits**

(a)	Water Supply Benefit Value (\$/AF) (1)	
(b)	Average Annual Extraction (AF) (2)	
(c)	Total Annual Water Supply Benefits (\$) (a / b)	
(d)	Discounted Water Supply Benefits \$(3) (c x 15.7)	

(1) From Tables 5a, 5b, or 5c.

(2) From Table 1.

(3) Discounted water supply benefits for 50-year period with discount rate of 6%.

**Table 6—Lift benefits**

(a)	Average Annual Net Recharge (AF) (1)	
(b)	Area (Acres) (2)	
(c)	Storage Coefficient	
(d)	Change in Depth to Groundwater (FT) (3)	
(e)	Pumping Costs (\$/AF/FT)	
(f)	Volume Pumped (AF/YR) (4)	
(g)	Annual Lift Benefit (\$) (6) (d) x (e) x (f)	
(h)	Discounted Lift Benefits (\$) (6) (g) x 233	

(1) From Table 1.

(2) Area overlying project groundwater basin.

(3) Equal to: (1/storage coefficient) x (average annual net recharge) x (1/area)

(4) Volume pumped by all groundwater users overlying basin. Exclude in-lieu recharge from project.

(5) Equal to: (pumping costs) x (volume pumped) x (change in depth)

(6) Annual lift benefit x 233. This is the discounted lift benefits for 50-year period with discount rate of 6 percent. The 233 factor accounts for the accumulation of annual net recharge over time as well as the discounting of the accumulated net recharge.

**Table 7—Avoided pumping costs (*in-lieu recharge*)**

(a)	Average Annual In-Lieu Recharge (AF) (1)	
(b)	Depth to Groundwater (FT)	
(c)	Pumping Costs (\$/AF/FT)	
(d)	Average Annual Avoided Pumping Costs (2) ( $a \times b \times c$ )	
(e)	Discounted Avoided Pumping Costs (\$) (3) ( $d \times 15.7$ )	

- (1) From Table 1.
- (2) Equal to: (in-lieu recharge) x (depth to groundwater) x (pumping costs).
- (3) Average annual avoided pumping costs x 15.7. Results in discounted avoided pumping costs for 50-year period with discount rate of 6 percent.

# Appendix IV

## Sample resolution

Resolution No. \_\_\_\_\_

Resolved by the \_\_\_\_\_  
(Governing body, city council, or other)

of the \_\_\_\_\_  
(Agency, city, county, or other)

that pursuant and subject to all of the terms and provisions of the Safe Drinking Water, Clean Water, Watershed Protection, and Flood Protection Act, and amendments thereto, application by this \_\_\_\_\_  
(Agency, city, county, or other)

be made to the California Department of Water Resources to obtain a groundwater recharge project construction loan.

The \_\_\_\_\_ of the  
(Presiding officer, president, city manager, or other official)

\_\_\_\_\_ is hereby authorized and directed to  
(Agency, city, county, or other)  
prepare the necessary data, make investigations, sign, and file such application with the California Department of Water Resources.

Passed and adopted at a regular meeting of the \_\_\_\_\_  
(Board of Directors, Supervisors, etc.)  
of the \_\_\_\_\_  
(Agency, city, county, or other)

on \_\_\_\_\_ .  
(Date)



Authorized  
Original  
Signature \_\_\_\_\_

Printed Name \_\_\_\_\_

Title \_\_\_\_\_

Clerk/Secretary \_\_\_\_\_

# Appendix V— Environmental Impact Checklist

## Evaluation of Environmental Impacts:

1) A brief explanation is required for all answers except “No Impact” answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A “No Impact” answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A “No Impact” answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. “Potentially Significant Impact” is appropriate if there is substantial evidence that an effect may be significant. If there are one or more “Potentially Significant Impact” entries when the determination is made, an EIR is required.

4) “Negative Declaration: Less Than Significant With Mitigation Incorporated” applies where the incorporation of mitigation measures has reduced an effect from “Potentially

Significant Impact” to a “Less Than Significant Impact.” The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from Section XVII, “Earlier Analyses,” may be cross-referenced).

5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:

a) Earlier Analysis Used. Identify and state where they are available for review.

b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

c) Mitigation Measures. For effects that are “Less than Significant with Mitigation Measures Incorporated,” describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., gen-



eral plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8) This is only a suggested form, and lead agencies are free to use different formats;

however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9) The explanation of each issue should identify:

- a) the significance criteria or threshold, if any, used to evaluate each question; and
- b) the mitigation measure identified, if any, to reduce the impact to less than significance

## Environmental Impact Checklist (continued)

### SAMPLE QUESTION

Issues:

Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
--------------------------------------	---	------------------------------------	--------------

#### I. AESTHETICS -- Would the project:

- a) Have a substantial adverse effect on a scenic vista?
- b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?
- c) Substantially degrade the existing visual character or quality of the site and its surroundings?
- d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

II. AGRICULTURE RESOURCES: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:

- a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?
- b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?
- c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

III. AIR QUALITY -- Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:

- a) Conflict with or obstruct implementation of the applicable air quality plan?
- b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?
- c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Environmental Impact Checklist (continued)

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>VIII. HYDROLOGY AND WATER QUALITY -- Would the project:</b>				
a) Violate any water quality standards or waste discharge requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Otherwise substantially degrade water quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Environmental Impact Checklist (continued)

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
<b>VI. GEOLOGY AND SOILS -- Would the project:</b>				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ii) Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
iii) Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
iv) Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>VII. HAZARDS AND HAZARDOUS MATERIALS --</b>				
Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Environmental Impact Checklist (continued)

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within 1 mile of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Expose people or structures to a significant risk of injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b><u>VIII. HYDROLOGY AND WATER QUALITY</u> -- Would project:</b>				
a) Violate any water quality standards or waste discharge requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the productive capacity of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Substantially alter the existing drainage pattern on site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Substantially alter the existing drainage pattern on site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Otherwise substantially degrade water quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Place housing within a 100-year flood hazard area mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



## Environmental Impact Checklist (continued)

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j) Inundation by seiche, tsunami, or mudflow?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>IX. LAND USE AND PLANNING</b> - Would the project:				
a) Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>X. MINERAL RESOURCES</b> -- Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>XI. NOISE</b> --				
Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Environmental Impact Checklist (continued)

	entally nificant ipact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
<b>XII. POPULATION AND HOUSING -- Would the pr</b>				
a) Induce substantial population growth in an area, either directly (for example, by proposing new home businesses) or indirectly (for example, through exten of roads or other infrastructure)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Displace substantial numbers of existing housing necessitating the construction of replacement hous elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Displace substantial numbers of people, necessi the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>XIII. PUBLIC SERVICES</b>				
a) Would the project result in substantial adverse physical impacts associated with the provision of ne physically altered governmental facilities, need for or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain accept service ratios, response times or other performance objectives for any of the public services:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>XIV. RECREATION --</b>				
a) Would the project increase the use of existing neighborhood and regional parks or other recreation facilities such that substantial physical deterioration the facility would occur or be accelerated?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Does the project include recreational facilities o require the construction or expansion of recreationa facilities which might have an adverse physical effe the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>XV. TRANSPORTATION/TRAFFIC -- Would the p</b>				
a) Cause an increase in traffic which is substantial relation to the existing traffic load and capacity of t street system (i.e., result in a substantial increase in the number of vehicle trips, the volume to capacity on roads, or congestion at intersections)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Exceed, either individually or cumulatively, a le service standard established by the county congesti management agency for designated roads or highwa	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Environmental Impact Checklist (continued)

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Result in inadequate parking capacity?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### XVI. UTILITIES AND SERVICE SYSTEMS --

Would the project:

a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Comply with federal, state, and local statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



## Environmental Impact Checklist (continued)

### XVII. MANDATORY FINDINGS OF SIGNIFICANCE -

a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the natural resources of California history or prehistory?

Potentially Significant Impact	Less than Significant With Mitigation	Less Than Significant Impact	No Impact
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<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of the project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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c) Does the project have environmental effects which will cause substantial adverse effects on human beings either directly or indirectly?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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# Appendix VI—Permit Checklist

Consider whether any of the permits listed in this Appendix are needed for construction of your project. Discuss in Part E. Note: an asterisk (\*) indicates that you must obtain these permits, if applicable, prior to contract execution.

## Type I: Is the project located in the areas listed?

<u>Geographic Area</u>	<u>Agency</u>	<u>Permit</u>
From 3 miles offshore to 1,000 yards inland	Coastal Commission	Coastal Development Permit
San Francisco, San Pablo, and Suisun bays from high water to 100 feet inland	San Francisco Bay Conservation and Development Commission	Development Permit
Suisun Marsh	San Francisco Bay Conservation and Development Commission	Marsh Development Permit
Lake Tahoe watershed	Tahoe Regional Planning Agency	Development Permit
Floodways in the Central Valley	The Reclamation Board	Encroachment Permit
*Navigable waterways or streams affecting navigable waterways	U.S. Army Corps of Engineers	Section 10 Permit
*Wetlands, including coastal and inland waters, lakes	U.S. Army Corps of Engineers	Section 404 Permit for disposal of dredged material or placement of any fill material into wetlands, lakes, rivers or tributaries
	Regional Water Quality Control Board	Section 401 Certification
*Wild and scenic rivers	The Resources Agency	Approval of diversions; Finding of Compatibility

## Type II: Does the project affect any of the resources listed?

<u>Resource</u>	<u>Agency</u>	<u>Permit</u>
Air	Air Pollution Control District	Authority to Construct and Permit to Operate for Activities emitting pollutants to the atmosphere
*Fish and wildlife habitat	U.S. Fish and Wildlife Service	Fish and Wildlife Agreements
	Department of Fish and Game	Streambed or Lake Alteration Agreements for Activities in streams or lakes and channels, and crossing spawning gravel protection
	Department of Fish and Game	Fish and Wildlife Agreements
*Water rights	State Water Resources Control Board, Regional Boards	Permit to Appropriate and State of Diversion and Use for Activities diverting surface water not previously appropriated
*Water quality	State Water Resources Control Board, Regional Boards	National Pollutant Discharge Permit or Waste Discharge Requirements for discharges to surface water; Water Reclamation Requirements
*Wetlands, including coastal and inland waters, lakes, rivers	U.S. Army Corps of Engineers	Section 404 Permit for disposal of dredged material or placement of any fill material into wetlands, lakes, rivers, or tributaries
*Navigable waters and tributaries to them	U.S. Army Corps of Engineers	Section 10 Permit for dredging, filling dock, groins, land jetties or for any obstruction or effect on the capacity of navigable waters
Navigable water and tributaries to them	Federal Energy Regulatory Commission	FERC License

**Type II: Does the project affect any of the resources listed? (continued)**

<u>Resource</u>	<u>Agency</u>	<u>Permit</u>
Beds of navigable waters	State Lands Commission	Land Use Lease for encroachments and docks
*Endangered species	U.S. Fish and Wildlife Service	Section 10a Incidental Take Permit
	Department of Fish and Game	Incidental Take Permit
Drinking water	Department of Health Services	Title 22 Drinking Water Standards

**Type III: Does the project involve any of the following activities?**

<u>Activity</u>	<u>Agency</u>	<u>Permit</u>
Power plants and transmission lines	California Energy Commission	Notice of Intention and Application for Certification
Generation of electrical power	Federal Energy Regulatory Commission	FERC Permit
Conversion of timberland to other uses	Department of Forestry	Timberland Conversion Permit
Cancellation of a Williamson Act Open Space	The Resources Agency	Approval of the Waiver of a Contract Cancellation Fee
Bridge construction	U.S. Coast Guard	Permit for bridges and causeways over navigable waters
Mineral prospecting and extraction of State lands	State Lands Commission	Prospecting Permit and Extraction Lease
Oil or gas well	Department of Conservation, Division of Oil and Gas	Oil or Gas Well Permit
Geothermal well	Department of Conservation, Division of Oil and Gas	Geothermal Well Permit

**Type III: Does the project involve any of the following activities? (continued)**

<u>Activity</u>	<u>Agency</u>	<u>Permit</u>
Geothermal prospecting and development on State lands	State Lands Commission	Geothermal Prospecting Permit and Extraction Lease
Encroachment on or across a State highway	Department of Transportation	Encroachment Permit; Utility Encroachment Permit
Construction, alteration, maintenance, operation, and removal of dams or reservoirs	Department of Water Resources, Division of Safety of Dams	Approval of Plans
Construction or alteration of dams	Federal Energy Regulatory Commission	FERC License
Dredging	Department of Fish and Game	Standard or Special Suction
Removal of sand, gravel, and dredge spoils from State-owned lands	State Lands Commission	Grant or Privilege
*Dredging or placement of fill or other materials or structure in wetlands	U.S. Army Corps of Engineers	404 Permit
	Regional Water Quality Control Board	401 Certification
*Water diversion from a State wild or scenic river	The Resources Agency	Determination of Need and No Adverse Effect
Surface mining	City or County	Reclamation Plan

**Type IV: Property rights**

Considerations

- Who owns or controls the land? (*Private owner, lessee, public agency owner?*)
- Does the loan applicant have the landowner's permission?

# *Appendix VII—CALFED Record of Decision*

## *Appendix A Mitigation Measures*

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## **APPENDIX A**

### **Mitigation Measures Adopted in the Record of Decision**



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## **Appendix A**

### **Mitigation Measures Adopted in the Record of Decision**

The CALFED Agencies commit to considering and adopting the following mitigation measures where appropriate in development and implementation of project specific actions. The mitigation measures address short-term, long-term and cumulative effects of the CALFED Program. The measures are grouped by section from the impact analysis chapters of the Final Programmatic EIS/EIR.

**5.1 Water Supply and Water Management.** Potentially significant effects of implementing the Preferred Program on water supply and water management include temporary local water supply interruptions due to turbidity of water during construction of Program facilities, levee construction and maintenance, and habitat restoration activities.

The following mitigation measures will reduce potential effects of implementation of the Preferred Program Alternative on water supply and water management:

1. Use best construction and drainage management practices to avoid transport of soils and sediments into waterways.
2. Use cofferdams to construct levees and channel modifications in isolation from existing waterways.
3. Use sediment curtains to contain turbidity plumes during dredging.
4. Schedule ground disturbing construction during the dry season.

**5.3 Water Quality.** Implementation of the Preferred Program Alternative may have several potentially significant effects on water quality. These effects include: (1) Releases of inorganic and organic suspended solids into the water column and turbidity resulting from increased erosion during construction, dredging, or drainage of flooded lands; (2) Releases of toxic substances, such as pesticides, selenium, and heavy metal residues, into the water column during construction and dredging and other Program actions; (3) Net increases in salinity if evaporation increases converting irrigated cropland to wetlands; (4) Increased electrical conductivity (a measure of salinity) of water in the Delta; (5) Increases of TOC in river water caused by the increased contact between flowing or ponded water and vegetation or peat soils that would result from conversion of agricultural lands to wetlands and from actions in other Program elements; (6) Increased water temperatures and resultant decreased dissolved oxygen concentrations due to the increased residence time of water in the Delta and from actions in various Program elements; (7) Decreases in in-stream water quality if water use efficiency measures or water transfers reduce diluting flows; (8) Increases in concentrations of constituents of concern if water transfers reduce in-stream flows and deplete river assimilative capacity; (9) Increase in methylation of mercury in constructed shallow-water habitat; (10) Degradation of surface water by the transfer of poorer quality groundwater; (11) Changes in natural flow regimes in areas where new surface storage is built; and (12) Surface storage inundation of toxic material.

The following mitigation measures will reduce potential effects of implementation of the Preferred

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Program Alternative on water quality:

1. Improve treatment levels provided at municipal wastewater treatment plants to upgrade the quality of the constituents of concern discharged to receiving waters in order to compensate for the reduction in dilution caused by improved water use efficiency. Improved salt management of wastewater inputs to treatment plants could reduce salt concentrations in discharges.
2. Release additional water from enlarged or additional off-stream surface storage, or from additional groundwater storage.
3. Release additional water from storage in existing reservoirs or groundwater basins.
4. Treat wastewater at the source, such as Delta drains, upgrade water treatment processes at drinking water treatment plants and/or provide treatment at the point of use (consumer's tap).
5. Use innovative, cost-effective disinfection processes (for example, UV irradiation, and ozonation, in combination with other agents) that form fewer or less harmful DBPs.
6. Use existing river channels for water transfers and timing the transfers to avoid adverse water quality effects.
7. Use best construction and drainage management practices to avoid transport of soils and sediments into waterways.
8. Use cofferdams to construct levees and channel modifications in isolation from existing waterways.
9. Use sediment curtains to contain turbidity plumes during dredging.
10. Separate water supply intakes from discharges of agricultural and urban runoff.
11. Apply agricultural and urban BMPs, and treat drainage from lands with concentrations of potentially harmful constituents to reduce contaminants. Treat drainage from agricultural lands underlain by peat soils to remove TOC.
12. Relocate diversion intakes to locations with better source water quality.
13. Restore additional riparian vegetation to increase shading of channels and reduce evaporation.
14. Identify and investigate issues regarding beneficial reuse of dredged material, including conducting core sampling and analysis of proposed dredged areas, and implement engineering solutions to avoid or prevent environmental exposure to toxic substances after dredging.
15. Cap exposed toxic sediments with clean clay/silt and protective gravel.
16. Test for mercury in soils and locate constructed shallow-water habitat away from sources of mercury until methods for reducing mercury in water and sediments are implemented.
17. Operate storage facility operations to maintain the frequency, magnitude, and duration of flows necessary to maintain and restore downstream water quality and habitat.
18. Avoid inundation or design solutions to inundation of toxic materials, such as covering with an engineered cap.
19. Schedule ground disturbing construction during the dry season.
20. Follow established and proper procedures and regulations for identifying, removing and disposing of contaminated materials.
21. Utilize the criteria in the Water Transfer Program, in conjunction with existing legal constraints on water transfers, to protect against adverse effects due to water transfers.

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- The criteria for future water transfer proposals include:
- C Water rights of all legal water users must not be impaired.
  - C Transfers must not harm fish and wildlife resources and their habitats.
  - C Transfers must not cause overdraft or degradation of groundwater basins, or impair correlative rights of overlying users.
22. Develop new groundwater basin management plans or expand existing groundwater basin management plans, including defining objectives, project boundaries, responsibilities, operation and maintenance specifications and procedures, and conditions under which corrective actions are taken.
  23. Reduce or discontinue groundwater pumping.
  24. Monitor and test groundwater wells and aquifers.
  25. Continue the studies concerning reuse of beneficial Bay dredge material in the Delta for potential water quality impacts related to salinity, metals mobilization, and other environmental and health hazards.
  26. Investigate all potential sources of borrow and the cost effectiveness of each source's use for levee rehabilitation and construction, including the use of sediment traps as a source of borrow.
  27. Prepare a borrow plan that includes future costs and options for obtaining adequate quantities of borrow needed for implementation of the Levee System Integrity Plan.
  28. Modify water conveyance operations, including DCC and south Delta operations. Program implementation will occur in phases to permit new information gained from studies and monitoring to influence changes in facility design and operations.

**5.4 Groundwater.** Implementation of the Preferred Program Alternative may have potentially significant effects on groundwater. These effects include: (1) Changes in groundwater levels; (2) Increased demand for groundwater supplies; (3) Increased groundwater overdraft; (4) Increased land subsidence; (5) Increased degradation of groundwater quality from contaminant movement, salt-water intrusion, or naturally poor-quality water drawn into the aquifer; and (6) Impacts from groundwater recharge and storage system operations.

The following mitigation measures will reduce potential effects of implementation of the Preferred Program Alternative on groundwater:

1. Create additional groundwater or surface water storage facilities to improve water supply reliability and decrease overdraft.
2. Support voluntary transfers of water from basins with excess supplies.
3. Purchase water rights from willing sellers (including transferring water rights between sectors—for example, from agricultural to municipal uses).
4. Support local groundwater management that reduces overdraft and third-party effects, including reduction or discontinuation of groundwater pumping.
5. Implement conservation measures to reduce demand.
6. Integrate the Ecosystem Restoration Program floodplain restoration efforts with setback levees.
7. Support local and regional efforts to increase water supplies from recycling.

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8. Support increased regulations regarding new and existing domestic wells and septic systems.
  9. Develop alternative water supplies.
  10. Monitor and test groundwater wells and aquifers.
  11. Limit new septic tank systems in vulnerable areas.
  12. Allow water levels to increase periodically.
  13. Import new soil (including dredged spoil) to raise land surface.
  14. Support local projects to recharge aquifers.
  15. Support local agencies in distributing groundwater pumping over a wide region rather than to a concentrated area to minimize drawdown of the aquifer.
  16. Treat extracted groundwater at the well head.
  17. Dilute poor-quality groundwater with higher quality water.
  18. Support local agencies in developing new groundwater basin management plans or expanding existing groundwater basin management plans, including defining objectives, project boundaries, responsibilities, operation and maintenance specifications and procedures, and conditions under which corrective actions are taken.
  19. Temporarily remove the recharge system from service to avoid effects associated with high water tables.
  20. Monitor water-level conditions on islands adjacent to flooded Delta islands.
  21. Install interception wells at in-Delta storage facilities to control seepage.
  22. Line conveyance canals to prevent seepage.
  23. Control seepage through pumping and other appropriate measures.
  24. Design new levees and improve existing levees to withstand hydraulic stresses and seepage from flooding Delta islands.
  25. Utilize the criteria and objectives in the Water Transfer Program, in conjunction with existing legal constraints on water transfers, to protect against adverse effects due to water transfers. The criteria for future water transfer proposals include:
    - Water rights of all legal water users must not be impaired.
    - Transfers must not cause overdraft or degradation of groundwater basins, or impair correlative rights of overlying users.

**5.5 Geology and Soils.** Implementation of the Preferred Program Alternative may have potentially significant effects on geology and soils. These effects may include: (1) Conversion of agricultural land soils for levee system construction and potential for erosion on outboard slope of levees; (2) Increases in local subsidence from potential increased reliance on groundwater use; (3) Increases in wind and soil erosion and in soil salinity due to fallowed agricultural lands; (4) Increased construction-related short-term soil erosion, and increased sediment deposition and soil compaction; (5) Potential changes in downstream geomorphology from enlarging existing storage facilities and other Program actions; and (6) Ground disturbance, inundation, seepage, and shoreline wind- and wave-generated erosion from new storage facilities and other Program actions.

The following mitigation measures will reduce potential effects of implementation of the Preferred

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Program Alternative on geology and soils:

1. Monitor groundwater levels and subsidence in areas of increased reliance on groundwater resources and regulate withdrawal rates at levels below those that cause subsidence.
2. Minimize and avoid direct groundwater transfers or groundwater substitution transfers from regions: 1) experiencing long-term overdraft, 2) where subsidence historically has occurred, or 3) where local extensometers indicate that subsidence rates are increasing.
3. Protect flooded Delta island inboard levee slopes against wind and wave erosion with vegetation, soil matting, or rock.
4. Protect exposed soils with mulches, geotextiles, and vegetative ground covers during and after project construction activities in order to minimize soil loss.
5. Implement erosion control measures and bank stabilization projects.
6. Increase sediment deposition and provide substrate for new habitat by planting terrestrial and aquatic vegetation.
7. Measure channel morphology over time to monitor changes and implement erosion control measures where needed.
8. Re-use dredged materials to reduce or replace soil loss.
9. Leave crop stubble from previous growing season in place while fallowing and employ cultivation methods that will cause the least amount of disturbance in order to minimize erosion of surface soils.
10. Limit the salinity of replacement water, relative to local conditions, in water transfers.
11. Ensure that the volume of irrigation water used is sufficient to flush accumulated salts from the root zone.
12. Operate new storage facilities to minimize sediment trapping and increase sediment transport in rivers and tributaries.
13. Retrofit soil-comprised structures to seismic events with shock-absorbing devices and materials in areas of seismic vulnerability, wherever possible.
14. Prepare and implement best construction management plans.
15. Prepare and implement a water quality and soils monitoring program.
16. Prepare and implement construction mitigation plans.
17. Prepare and implement contingency plans for wetland and marshland restoration.
18. Modify storage facility operations to maintain the frequency, magnitude, and duration of flows necessary to maintain and restore downstream habitat.
19. Control boat traffic in order to reduce boat wakes to levels that will not cause levee or bank erosion.
20. Monitor water-level conditions on islands adjacent to in-Delta storage.
21. Install interception wells at in-Delta storage facilities to control seepage.
22. Line conveyance canals to prevent seepage.
23. Control seepage through pumping and other appropriate measures.
24. Design new levees and improve existing levees to withstand hydraulic stresses and seepage from flooding Delta islands.
25. Use cofferdams to construct levees and channel modifications in isolation from existing waterways.
26. Use sediment curtains to contain turbidity plumes during dredging.
27. Investigate the cost effectiveness and safety of using sediment traps as a source of borrow.

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**5.6 Noise.** Implementation of the Preferred Program Alternative may have potentially significant effects on noise. These effects may include: (1) Increased noise from heavy equipment operation during construction; (2) Noise from construction-related traffic along major access and haul routes and construction labor force vehicle traffic; (3) Increased noise from facility operation of spillways, pumping generating plants, and switchyards; (4) Increased noise from automobile or boat traffic associated with recreational use at enlarged reservoirs; and (5) Increased traffic noise from permanently relocated roadways.

The following mitigation measures will reduce potential effects of implementation of the Preferred Program Alternative on noise:

1. Use electrically powered equipment instead of internal combustion equipment where feasible.
2. Locate staging and stockpile areas, and supply and construction vehicle routes as far away from sensitive receptors as possible.
3. Establish and enforce construction site and haul road speed limits.
4. Restrict the use of bells, whistles, alarms, and horns to safety warning purposes.
5. Design equipment to conform with local noise standards.
6. Locate equipment as far from sensitive receptors as possible.
7. Equip all construction vehicles and equipment with appropriate mufflers and air inlet silencers.
8. Restrict hours of construction to periods permitted by local ordinances.
9. Locate noisy equipment within suitable sound-absorbing enclosures.
10. Erect sound wall barriers or noise attenuation berms between noise generation sources and sensitive receptors.
11. Schedule construction activities to avoid breeding seasons of sensitive species and peak recreating use.
12. Locate redirected roadways away from sensitive receptors.
13. Encourage use of public transportation and carpooling for construction workers.
14. Restrict boating speeds or access to areas with sensitive receptors.
15. Conduct project-specific noise analyses for actions with noise impacts.

**5.7 Transportation.** Implementation of the Preferred Program Alternative may have potentially significant effects transportation. These effects may include: (1) Increasing local traffic flows as the public accesses recreational resources at new storage facilities; (2) Changing traffic flows as roads are temporarily rerouted around construction sites; (3) Relocating or permanently closing roads; (4) Delays and disruptions resulting from detouring traffic as new roadways and railroad bridges are constructed around storage and conveyance facilities; (5) Adding construction vehicles to existing traffic levels, especially on narrow, two-lane local roads with winding routes; (6) Closing two-lane roads to one lane in order to facilitate roadway improvements or relocations associated with the Watershed Program; (7) Impeding or blocking patrol or rescue boats in Delta channels where fish barriers and flow control structures are installed; and (8) Creating safety conflicts by operating large, slow-moving dredging equipment on Delta waterways.

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The following mitigation measures will reduce potential effects of implementation of the Preferred Program Alternative on transportation:

1. Provide convenient and parallel detours to routes closed during construction.
2. Allow trains to use existing tracks while bridges are being built.
3. Encourage use of public transportation and carpooling for construction workers.
4. Clearly mark roadway intersections with warnings where visibility is poor in the project vicinity.
5. Provide boat portage or a stationary jib crane.
6. Relocate boat launch facilities.
7. Relocate emergency access roads.
8. Require contractors to follow appropriate state and federal safety protocols.
9. Coordinate dredging and safety precautions with state and local authorities.
10. Schedule construction at times and seasons to minimize delays.
11. Expand public transportation resources and local roadways.
12. Expand public transportation, roads, and highways.
13. Locate roadways in areas with fewer conflicts.
14. Design roadways to avoid or minimize traffic congestion.

**5.8 Air Quality.** Implementation of the Preferred Program Alternative may have potentially significant effects on air quality. These effects may include: (1) Direct, short-term air pollutant emissions during construction activities; (2) Fugitive emissions of wind-blown dust; (3) Emissions associated with prescribed burning programs; (4) Emissions from increases in equipment use and cultivation, agricultural chemical use, and crop shifting and burning; (5) Emissions if land use changes lead to higher recreational uses; and (6) Emissions from use of fossil fuels or other energy resources associated with pressurized irrigation systems; and (7) Indirect air quality impacts from increased power generation to meet Program energy consumption and changes in operation.

The following mitigation measures will reduce potential effects of implementation of the Preferred Program Alternative on air quality:

1. Set traffic limits on construction vehicles.
2. Maintain properly tuned equipment.
3. Limit the hours of operation or amount of equipment.
4. Limit the use of agricultural chemicals.
5. Coordinate prescribed burning programs with relevant air quality management agencies to ensure that the programs are accounted for in air quality management plans.
6. Regularly water construction sites to control levels of dust in the air.
7. Use soil stabilizers and dust suppressants on unpaved service roadways.
8. Conduct daily contained sweeping of paved surfaces.
9. Limit vehicle idling time.
10. Use alternatively fueled equipment.
11. Require selection of borrow sites that are closest to fill locations.
12. Implement construction practices that reduce generation of particulate matter.

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13. Hydoseed and mulch exposed areas.
  14. Use cultivation practices that minimize soil disturbance.
  15. Follow air basin management plans to avoid or minimize vehicle-related emissions.
  16. Restrict the kinds of recreational vehicles or the times of operation for certain off-road vehicles on fallowed agricultural land to limit the amount of fugitive dust.
  17. Implement prescribed burning during favorable weather conditions.
  18. Implement alternatives to crop burning including tilling and shallow flooding.
  19. Coordinate crop stubble burning with relevant air quality management agencies to ensure that the programs are accounted for in air quality management plans.
  20. Encourage use of public transportation and carpooling for construction workers.
  21. Obtain replacement power from non-emitting sources such as other hydro, solar, and wind sources. This can occur through construction of, or the use of incentives to construct non-emitting power plants. This approach is consistent with state and federal policies related to promoting use of renewable resource type generation as expressed in Public Utility Code Section 381(c) (part of what is commonly referred to as AB 1890) and Executive Order 12902.
  22. Utilize the best available control technology for new power production facilities.

**6.1 Fisheries and Aquatic Systems.** Implementation of the Preferred Program Alternative may have potentially significant effects on fisheries and aquatic systems. These effects may include: (1) Increased non-native species abundance and distribution to levels detrimental to native species from reestablishment of aquatic areas; (2) Blocked access to habitat and altered water quality and flow conditions from placement of barriers in the south Delta; (3) Altered natural ecosystem structure, removal of benthic communities, and creation of conditions that may damage habitat for desired species from dredging activities and other Program actions; (4) Release of toxic substances into surface waters; (5) Short-term disturbance of existing biological communities and species habitat, mobilized sediments, and input contaminants from construction activities; (6) Reduced streamflow and Delta outflow, changed seasonal flow and water temperature variability from water supply management, and changes in salinity associated with several Program elements resulting in reduced habitat abundance, impaired species movement, and increased loss of fish to diversions; (7) Increased entrainment loss of chinook salmon and other species from diversions to new off-stream and in-Delta storage; (8) Reduced frequency and magnitude of net natural flow conditions in the south and central Delta from Delta Cross Channel operations and south Delta barriers resulting in reduced system productivity, impaired species movement, and increased losses to diversions; (9) Reduced net flow conditions in the Sacramento River downstream of the diversion facility on the Sacramento River; (10) Increased fish mortality through abrasion, increased predation, and other factors from the new fish screen facility for the diversion facility on the Sacramento River; and (11) Delayed migration and reduced spawning success for adult fish moving from the Mokelumne River channels into the Sacramento River from fish screens and a diversion facility on the Sacramento River.

The following mitigation measures will reduce potential effects of implementation of the Preferred Program Alternative on fisheries and aquatic systems:



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1. Implement BMPs, including a storm water pollution prevention plan, toxic materials control and spill response plan, and vegetation protection plan.
  2. Limit construction activities to windows of minimal species vulnerability.
  3. Create additional habitat for desired species, including increased aquatic area and structural diversity through construction of setback levees and channel islands.
  4. Control undesirable non-native species.
  5. Operate new and existing diversions to avoid and minimize effects on fish--avoid facility operations during periods of high species vulnerability.
  6. Locate the diversion points to avoid primary distribution of desired species.
  7. Control predators in the diversion facility (screen bays) and modify diversion facility structure and operations to minimize predator habitat.
  8. Construct a barrier to fish movement on Georgiana Slough.
  9. Coordinate and maximize water supply system operations flexibility consistent with seasonal flow and water temperature needs of desired species.
  10. Identify and investigate issues regarding beneficial reuse of dredged material, including conducting core sampling and analysis of proposed dredged areas, and implement engineering solutions to avoid or prevent environmental exposure to toxic substances after dredging.
  11. Cap exposed toxic sediments with clean clay/silt and protective gravel.
  12. Locate constructed shallow-water habitat away from sources of mercury until methods for reducing mercury in water and sediment are implemented.
  13. Use cofferdams to construct levees and channel modifications in isolation from existing waterways.
  13. Use sediment curtains to contain turbidity plumes during dredging.
  14. Schedule ground disturbing construction during the dry season.
  15. Follow established and proper procedures and regulations for identifying, removing and disposing of contaminated materials.
  16. Utilize the criteria and objectives in the Water Transfer Program, in conjunction with existing legal constraints on water transfers, to protect against adverse effects due to water transfers. The criteria for future water transfer proposals include:
    - C Transfers must not harm fish and wildlife resources and their habitats.

**6.2 Vegetation and Wildlife.** Implementation of the Preferred Program Alternative may have potentially significant effects on vegetation and wildlife. These effects may include: (1) Temporary and permanent loss and degradation of wetland, riparian and other natural communities; (2) Substantial temporary or permanent loss and disturbance of wintering waterfowl foraging habitat; (3) Substantial decrease in important upland wildlife habitat and use areas; (4) Temporary and permanent fragmentation of riparian habitats and/or wildlife movement corridors; (5) Temporary or permanent loss of habitat or direct impacts on special-status species; (6) Loss of portions of rare natural communities and significant natural areas; (7) Temporary disturbance or mortality of special-status species due to construction and habitat management activities; (8) Permanent loss of incidental wetland and riparian habitats that depend on agricultural inefficiencies; and (9) Reduction in quantity or quality of forage for species of concern.

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The following mitigation measures will reduce potential effects of implementation of the Preferred Program Alternative on vegetation and wildlife:

1. Avoid direct or indirect disturbance to wetland and riparian communities, special-status species habitat, rare natural communities, significant natural areas, and other sensitive habitat.
2. Restore and enhance sufficient in-kind wetland and riparian habitat or rare natural communities and significant natural areas at offsite locations (near project sites) before or at the time that project impacts are incurred. Replace not only acreage lost, but also habitat value loss.
3. Design Program features to permit on-site mitigation or nearby restoration of wetland, riparian habitat, special-status species habitat, rare natural communities, and significant natural areas that have been removed by permanent facilities.
4. Phase the implementation of Ecosystem Restoration Program habitat restoration to offset temporary habitat losses and to restore habitat (including special-status species habitat) before, or at the same time that, project impacts associated with the Ecosystem Restoration Program are incurred.
5. Restore wetland and riparian communities, special-status species habitat, and wildlife use areas temporarily disturbed by on-site construction activities immediately following construction. Example actions include direct planting of native plants, controlling non-native plants to improve conditions for reestablishing native plants, and enhancing and restoring the original site hydrology to allow for the natural reestablishment of the affected plant community.
6. Avoid creating wetlands in areas with high concentrations of mercury in sediments and anaerobic conditions.
7. Phase the implementation of modifications to levees that would be necessary to meet PL 84-99 standards in order to minimize the effects of fragmentation of riparian habitats and associated wildlife.
8. Implement BMPs such as avoiding disturbance to highly erodible soils and installing siltation barriers and detention basins to reduce the potential for siltation of nearby wetlands.
9. Maintain sufficient outflow downstream of constructed off-stream reservoirs to maintain existing downstream wetland riparian communities.
10. Restore or enhance sufficient waterfowl foraging habitat near existing use areas to offset impacts on the abundance, quality and availability of waterfowl forage. Restoration and enhancement actions include restoring and managing seasonal wetlands for wintering waterfowl, producing crops with high forage value ( such as corn and rice), and modifying farming practices to increase forage availability ( for example, leaving portions of forage crops unharvested through winter or shallowly flooding fields).
11. Avoid important wildlife habitat areas, such as critical deer winter range and fawning habitat.
12. Restore and enhance important wildlife habitat use areas temporarily disturbed by on-site construction activities by planting and maintaining native species immediately following construction.
13. Restore and enhance upland habitat areas within affected watersheds or in other watershed

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- if sufficient habitat enhancement is unavailable within the affected watershed. This could include modifying existing land management practices (for example, grazing and fire management practices) to improve conditions for the natural reestablishment and long-term maintenance of affected plant communities and habitats.
14. Avoid direct or indirect disturbance to areas occupied by special-status species.
  15. Avoid construction or maintenance activities within or near occupied special-status species habitat areas or important wildlife use areas when species may be sensitive to disturbance, such as during the breeding season.
  16. Restore habitat areas occupied by special-status species that are temporarily disturbed by on-site construction activities immediately following construction.
  17. Restore and enhance suitable habitat areas that are occupied by, or are near and accessible to, special status species that have been affected by the permanent removal of occupied habitat areas.
  18. Phase habitat restoration actions to restore sufficient suitable habitat to minimize the adverse affects of impacts on occupied special-status species habitats before impacts are incurred.
  19. For species for which relocation or artificial propagation is feasible, establish additional populations of special-status species adversely affected by the Program in suitable habitat areas elsewhere within their historical range.
  20. Provide incentives to alter agricultural practices to improve habitat conditions for affected special-status species that use agricultural lands. This could included planting and managing crops to increase the availability or quantity of forage for affected species.
  21. Avoid direct or indirect disturbances to rare natural communities and significant natural areas.
  22. Restore or enhance disturbed rare natural communities or significant natural areas at off-site locations before, or when, Program actions that could affect these communities are incurred.
  23. Restore rare natural communities or significant natural areas at or near affected locations after Program activities are completed.
  24. Manage recreation-related activities on lands managed under the Program to minimize or avoid potential adverse effects of recreation-related activities on sensitive habitats, important wildlife use areas, and special-status species.
  25. Phase ERP to initially restore natural waterfowl foraging on agricultural lands with low forage value while restored habitat with high forage value develops.
  26. Phase ERP to initially restore wetland habitat with high forage value to offset the loss of agricultural foraging habitat that may result from the ERP.
  27. Restore riparian vegetation disturbed by on-site construction activities immediately following construction.
  28. Restore or enhance sufficient in-kind riparian habitat at off-site locations, near project sites, in a manner that reduces the degree of existing habitat fragmentation before, or when, project impacts are incurred to offset habitat losses.
  29. Restore habitat temporarily disturbed by on-site construction activities immediately following construction.
  30. Restore rare natural communities, significant natural areas, and wildlife use areas

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temporarily disturbed by on-site construction activities immediately following construction. Example actions include direct planting of native plants, controlling non-native plants to improve conditions for reestablishing native plants, and enhancing and restoring the original site hydrology to allow for the natural reestablishment of the affected plant community.

31. Restore and enhance suitable habitat areas that are occupied by, or are near and accessible to, special-status species that have been adversely affected by the permanent removal of occupied habitat areas.

**7.1 Agricultural Land and Water Use.** Implementation of the Preferred Program Alternative may have potentially significant effects on agricultural land and water use. These effects may include: (1) Conversion of prime, statewide important, and unique farmlands to project uses; (2) Conflicts with local government plans and policies; and (3) Conflicts with adjacent land uses.

The following mitigation measures will reduce potential effects of implementation of the Preferred Program Alternative on agricultural land and water use:

1. Site and align Program features to avoid or minimize effects on agriculture.
2. Examine structural and nonstructural alternatives to achieve project goals in order to avoid effects on agricultural land.
3. Implement features that are consistent with local and regional land use plans.
4. Involve all affected parties, especially landowners and local communities, in developing appropriate configurations to achieve the optimal balance between resource effects and benefits.
5. Retain water allocations from retired drainage-impaired lands within the existing water districts.
6. Support the testing and application of alternative crops to idled farmland (for example, agroforestry or energy crops).
7. Provide water supply reliability benefits to agricultural water users.
8. Support the California Farmland Conservancy Program in acquiring easements on agricultural land in order to prevent its conversion to urbanized uses and increase farm viability. Focus on lands in proximity to where any conversion effect takes place.
9. Restore existing degraded habitat as a priority before converting agricultural land.
10. Focus habitat restoration efforts on developing new habitat on public lands before converting agricultural land.
11. If public lands are not available for restoration efforts, focus restoration efforts on acquiring lands that can meet ecosystem restoration goals from willing sellers where at least part of the reason to sell is an economic hardship (for example, lands that flood frequently or where levees are too expensive to maintain).
12. Use farmer-initiated and developed restoration and conservation projects as a means of reaching Program goals.
13. Where small parcels of land need to be acquired for waterside habitat, seek out points of land on islands where the ratio of levee miles to acres farmed is high.
14. Obtain easements on existing agricultural land for minor changes in agricultural practices

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- (such as flooding rice fields after harvest) that would increase the value of the agricultural crop(s) to wildlife.
15. Include provisions in floodplain restoration efforts for compatible agricultural practices.
  16. Purchase water for habitat purposes so that the same locality is not affected over the long term.
  17. Use a planned or phased habitat development approach in concert with adaptive management.
  18. Minimize the amount of water supply required to sustain habitat restoration acreage.
  19. Develop buffers and other tangible support for remaining agricultural lands. Vegetation planted on these buffers should be compatible with farming and habitat objectives.
  20. In implementing levee reconstruction measures, work with landowners to establish levee reconstruction methods that avoid or minimize the use of agricultural land.
  21. Work with landowners to establish levee subsidence BMPs that avoid effects on land use practices. Through adaptive management, further modify BMPs to reduce effects on agricultural land.
  22. Implement erosion control measures to the extent possible during and after project construction activities. These erosion control measures can include grading the site to avoid acceleration and concentration of overland flows, using silt fences or hay bales to trap sediment, and revegetation areas with native riparian plants and wet meadow grasses.
  23. Protect exposed soils with mulches, geotextiles, and vegetative ground covers to the extent possible during and after project construction activities in order to minimize soil loss.
  24. Use rotational fallowing to reduce selenium drainage.
  25. When it appears that land within an agricultural preserve may be acquired from a willing seller by a State CALFED agency for a public improvement as used in Government Code Section 51920, advise the Director of Conservation and the local governing body responsible for the administration of the preserve of the proposal.
  26. Limit the number of acres that can be fallowed (in order to produce transferrable water) in a given area (district or county) or the amount of water that can be transferred from a given area.
  27. Support assistance programs to aid local entities in developing and implementing groundwater management programs in water transfer source areas.
  28. Dredged materials will be analyzed, dredged and handled in accordance with permit requirements. Permits will incorporate mitigation strategies identified in Section 5.3 to prevent release of contaminants of concern.
  29. Utilize the criteria and objectives in the Water Transfer Program, in conjunction with existing legal constraints on water transfers, to protect against adverse effects due to water transfers. The criteria for future water transfer proposals include:
    - C Water transfers must be voluntary.
    - C Water market transactions must result in the transfer or exchange of water that truly increases the utility of the supply, not water that a transferor has never used or water that would have been legally available for downstream use in the absence of a transfer.
    - C Water rights of all legal water users must not be impaired.
    - C Transfers must not cause overdraft or degradation of groundwater basins, or impair

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- correlative rights of overlying users.
  - C Entities receiving transferred water should be required to show that they are making efficient use of existing water supplies.
  - C Water rights holders (whether districts or individuals) must play a strong role in determining whether water to which they have a right is transferred.
  - C The beneficial and adverse impacts on fiscal integrity of the districts and on the economy of agricultural communities in source and receiving areas cannot be ignored.
30. Implement seepage control measures.
  31. Support local groundwater management that reduces overdraft and third-party effects, including reduction or discontinuation of groundwater pumping.

**7.4 Urban Land Use.** Implementation of the Preferred Program Alternative may have potentially significant effects on urban land use. These effects may include: (1) Displacement of some existing commercial uses and residents from Program actions located in urban land use areas; (2) Physical disruption or division of established communities; and (3) Potential conflicts of habitat development and storage and conveyance facilities with general plan land use designations or zoning if located in urban use areas.

The following mitigation measures will reduce potential effects of implementation of the Preferred Program Alternative on urban land use:

1. Select and design program actions that minimize the displacement of existing residents.
2. Select and design Program actions that do not physically disrupt or divide established communities.
3. Select Program actions that are consistent with local and regional land use plans. This could include consulting and working with local jurisdictions affected by Program actions early in the planning and environmental review process.
4. Notify all affected persons (for example, residents, property owners, school officials, and business owners) in the project area of the construction plans and schedules. This could include arranging schedules for road detours with residents and businesses to maintain access to homes, schools, and businesses; as well as providing protection, relocation, or temporary disconnection of utility services.
5. Select and design Program actions that do not physically disrupt or divide established communities.
6. Minimize the amount of permanent easement required for construction of facilities and consult with property owners to select easement locations that would lessen property disruption and fragmentation.
7. Relocate roads and utilities prior to project construction to ensure continued access and utility service through the project area.
8. Prepare a detailed engineering and construction plan as part of the project design plans and specifications, and include procedures for rerouting and excavating, supporting, and filling areas around utility cables and pipes in this plan.
9. Verify utility locations through consultation with appropriate entities and field surveys

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- (such as probing and pot-holing).
10. Reconnect disconnected cables and lines promptly.

**7.6 Utilities and Public Services.** Implementation of the Preferred Program Alternative may have potentially significant effects on utilities and public services. These effects may include: (1) Need for relocation or modification of major infrastructure components; and (2) Increased risk of gas line rupture during construction.

The following mitigation measures will reduce potential effects of implementation of the Preferred Program Alternative on utilities and public services:

1. Site project facilities and transmission infrastructure to avoid existing infrastructure.
2. Construct overpasses, small bridges, or other structures to accommodate existing infrastructure.
3. Coordinate construction activities with utility providers.
4. Design and operate facilities to minimize the amount of energy required and to maximize the amount of energy created.
5. Design project facilities to avoid or minimize their effect on existing infrastructure.

**7.7 Recreation.** Implementation of the Preferred Program Alternative may have potentially significant effects on recreation. These effects may include: (1) Temporary closure of recreation areas during construction; (2) Decrease in recreation opportunities and increases in boat traffic in some areas due to speed zone restrictions or prohibition of motorized boating in some areas; (3) More stringent enforcement of boat discharges; (4) Temporary or permanent changes in boating access and navigation; (5) Permanent closure of recreation facilities; (6) Potential decrease in flooded lands suitable for wildlife, hunting, and fishing as a result of water use efficiency actions; (7) Reduced water-contact recreation quality from cold water reservoir releases; (8) Displacement of fish and wildlife and loss of terrestrial and loss of on-stream recreation from new off-stream or expanded on-stream reservoirs; (9) Potential for reduced access to recreation facilities and decreased recreation opportunities from changes in reservoir levels; and (10) Potential short-term construction effects of dredging, such as obstructing or closing channels and creating noise and visual effects.

The following mitigation measures will reduce potential effects of implementation of the Preferred Program Alternative on recreation:

1. Incorporate project-level recreation improvements and enhancements.
2. Work with recreational interests to protect and enhance recreation resources.
3. Conduct an analysis of boating circulation to ensure that appropriate alternative routes are identified and clearly marked if boating circulation in the Delta is to be modified due to temporary, seasonal, or permanent channel closures or to speed restrictions.
4. Identify and mark alternate boating routes.
5. Restoring and designing existing and new levees to accommodate vehicular access and parking for shoreline fishing, boat launching, swimming, hiking, bicycling, and wildlife

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- viewing where feasible.
  6. Maintain boating access to prime areas.
  7. Construct portage facilities.
  8. Construct boat locks.
  9. Provide public information regarding alternate access.
  10. Avoid construction during peak-use seasons and times.
  11. Post warning signs and buoys in channels.
  12. Provide in-kind recreation facilities.
  13. Maintain reservoir levels as high as feasible during the recreation season, given regulatory and other operational constraints.
  14. Minimize water level fluctuation and establish minimum pool levels.
  15. Coordinate operation of all reservoir facilities to minimize adverse reservoir fluctuations in any particular facility consistent with regulatory and other operational constraints.
  16. Purchase trail rights-of-way or recreational easements.
  17. Provide or improve vehicle access and parking for recreation areas.
  18. Provide access to waterfront areas and island edges.
  19. Create new day-use boating and camping areas.
  20. Relocate or construct new recreation facilities and infrastructure.

**7.8 Flood Control.** Implementation of the Preferred Program Alternative may have potentially significant effects on flood control. These effects may include: (1) Effects on levee stability from levee and berm vegetation management practices for habitat purposes; (2) Reduced levee stability from habitat restoration using conservation easements along riparian corridors; (3) Increased seepage on adjacent islands, possibly leading to flooding from seepage-induced failure from shallow flooding of Delta islands susceptible to subsidence; (4) Increases in wind-fetched and wave erosion on landside levee slopes from island flooding; (5) Increased levels of flooding downstream of diversions after removal of diversion structures and other obstructions to flow in the Sacramento River tributaries; (6) Increased flood stages along small streams due to increases in the roughness of the stream channel from vegetation on stream banks; (7) Levee slumping and cracking caused by groundwater overdraft and subsidence; and (8) Increased stage upstream of and possible decreased stage downstream from gate structures located in channels that reduce the channel's flood flow conveyance.

The following mitigation measures will reduce potential effects of implementation of the Preferred Program Alternative on flood control:

1. Allow reasonable clearing of deep-rooted trees and shrubs from levee side slopes to support inspection, maintenance, repair, and emergency response, while preserving habitat values.
2. Permit clearing of deep-rooted shrubs and trees on levee side slopes. Trees and shrubs should be allowed to grow only on adjacent berms. If roots penetrate levees, fill materials should be added to levee landside slopes in order to construct a partial setback levee and increase stability.
3. Widen streams downstream of removed water diversion structure to increase conveyance



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- capacity.
4. Incorporate flood control criteria into the design of stream bank revegetation projects. For example, by increasing the width of vegetated sections to maintain conveyance capacity, the net effect of vegetation on flood control would be negligible.
  5. Identify locations susceptible to seepage-induced failure on Delta islands that may be intentionally flooded for habitat.
  6. Implement a seepage monitoring program on nonflooded islands adjacent to potential shallow-flooded islands.
  7. Develop seepage control performance standards to be used during island flooding and storage periods to determine net seepage caused by shallow flooding.
  8. Improve levees to withstand expected hydraulic stresses and seepage.
  9. Design erosion protection measures to minimize or eliminate wave splash and run-up erosion.
  10. Use rip rap or another suitable means of slope protection to dissipate wave force.
  11. Construct large wind/wave breaks in the flooded islands to reduce wind-fetch and erosion potential.
  12. Identify existing or planned wells that could affect groundwater and substrate conditions underlying nearby levees or flood control devices.
  13. Provide incentives to terminate use of wells that can adversely affect levee stability, reduce their pumping volume to safe withdrawal levels as they affect substrate stability, or otherwise replace them with sources that could not affect levee stability.
  14. Design structures to minimize the loss of channel conveyance at gate structures located in channels.
  15. Install relief wells near the toes of existing levees on neighboring lands.
  16. Construct toe berms with an internal drainage system on neighboring lands.
  17. Lower the pool elevation on the storage islands.
  18. Develop wetland easements adjacent to levees on neighboring islands.
  19. Construct a combination of seep and interior ditches and increase pumping rates, install clay blankets, and install impervious cutoff walls through storage island levees.
  20. Control boat traffic in order to reduce boat wakes to levels that will not cause levee or bank erosion.
  21. Coordinate erosion protection measures and wave force dissipation measures with the Ecosystem Restoration Program to minimize adverse effects to revegetation efforts.
  22. Implement flood management measures including dredging, levee maintenance, and snag removal.
  23. Support local groundwater management that reduces overdraft and third-party effects, including reduction or discontinuation of groundwater pumping..
  24. Support local agencies in distributing groundwater pumping over a wide region rather than to a concentrated area to minimize drawdown of the aquifer.

**7.11 Cultural Resources.** Implementation of the Preferred Program Alternative may have potentially significant effects on cultural resources. These effects may include: (1) Effects on cultural resources from construction, excavation, fill and flooding; and (2) Alteration of the

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historic setting of a cultural resource.

The following mitigation measures will reduce potential effects of implementation of the Preferred Program Alternative on cultural resources:

1. Conduct cultural resource inventories.
2. Avoid sites through project redesign.
3. Map sites prior to undertaking actions that affect cultural resources.
4. Conduct surface collections.
5. Perform test excavations.
6. Probe for potentially buried sites.
7. Prepare reports to document mitigation work.
8. Conduct full-scale excavation of sites slated for destruction as a result of projects.
9. Prepare public interpretive documents.
10. Document historic structures by preparing Historic Engineering Records or Historic American Building Surveys.
11. Conduct ethnographic studies for traditional cultural properties.

**7.12 Public Health and Environmental Hazards.** Implementation of the Preferred Program Alternative may have potentially significant effects on public health and environmental hazards. These effects may include: (1) Short- and long-term increases in mosquito breeding habitat from wetland restoration activities and fluctuating water levels; (2) Increased risk of groundwater and surface water contamination from naturally occurring or spilled hazardous materials and from improper handling of hazardous materials; (3) Increased exposure to hazardous materials and waste from construction activities related to storage and conveyance projects and other Program elements; (4) Increases in water quality degradation, resuspension of contaminants, and exposure to hazardous materials from dredging activities; and (5) Increases in levels of methyl mercury released into the Bay-Delta ecosystem from wetland restoration, levee rehabilitation activities and conveyance actions.

The following mitigation measures will reduce potential effects of implementation of the Preferred Program Alternative on public health and environmental hazards:

1. Use various mosquito control methods, such as biological agents, chemical agents, and ecological manipulation of mosquito breeding habitat.
2. Support actions to establish or find funding for mosquito abatement activities.
3. Remove or disturb water that remains stagnant for more than 3 days at a construction site.
4. Limit construction to cool weather, when mosquito production is lowest.
5. Limit construction to periods of low precipitation to avoid pools of standing water.
6. Follow established and proper procedures and regulations for identifying, removing and disposing of contaminated materials.
7. Increase monitoring activities to ensure that groundwater pumping equipment is operating to existing standards.
8. Limit or coordinate construction activities to favorable weather conditions to forestall dispersing hazardous materials.

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9. Conduct core sampling and analysis of proposed dredge areas and engineer solutions to avoid or prevent environmental exposure to toxic substances after dredging.
  10. Modify engineering plans to minimize mercury related problems.
  11. Cap exposed toxic sediments with clean clay/silt and protective gravel.
  12. Locate constructed shallow-water habitat away from sources of mercury until methods for reducing mercury in water and sediment are implemented.
  13. Use cofferdams to construct levees and channel modifications in isolation from existing waterways.
  14. Use sediment curtains to contain turbidity plumes during dredging

**7.13 Visual Resources.** Implementation of the Preferred Program Alternative may have potentially significant effects on visual resources. These effects may include: (1) Long-term visual effects of new facilities or modified existing facilities; (2) Effects in visually sensitive areas from restoration actions; (3) Degraded watershed views from such actions as erosion control and fire management practices; (4) Creation of borrow pits or spoils material disposal sites associated with storage, conveyance, levee projects, and other Program actions; and (5) Long-term visual effects from construction activities extending more than 5 years.

The following mitigation measures will reduce potential effects of implementation of the Preferred Program Alternative on visual resources:

1. Time changes in flow regimes to minimize “bathtub ring” effects during times of peak recreation use.
2. Minimize construction activities during the peak-use recreation season.
3. Avoid unnecessary ground disturbance outside the necessary construction area.
4. Water areas where dust is generated, particularly along unpaved haul routes and during earth-moving activities, to reduce visual effects caused by dust.
5. Locate and direct exterior lighting for construction activities so that it is concealed to the extent practicable when viewed from local roads, nearby communities, and any recreation areas.
6. Site proposed reservoir(s), if possible, to minimize required cut and fill and locate the reservoir on the flattest topographic section of the site to minimize its visibility.
7. Construct facilities with earth-tone building materials or other visually aesthetic design materials.
8. Revegetate disturbed areas as soon as possible after construction.
9. Locate visually obtrusive features, such as borrow pits and dredged material disposal sites, outside visually sensitive areas and observation sites.
10. Select vegetation type, placement, and density to be compatible with patterns of existing vegetation where revegetation occurs in natural areas. Vegetation such as emergent marsh grasses that can tolerate periodic flooding and drying may be useful.
11. Install landscape screening, such as grouped plantings of trees and tall shrubs, to screen proposed facilities from nearby sensitive viewers.
12. Use native trees, bushes, shrubs, and ground-cover for landscaping, when appropriate, at facilities such as dams and pumping-generating plants, and along new and expanded canals

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- and conveyance channels, in a manner that does not compromise facility safety and access.
  13. Create view opportunities of outstanding features through selective vegetation reduction or constructing roadside viewing areas.
  14. Recontour and add vegetation to areas rated as “poor” in variety class.

## Appendix VIII— Definitions

The words used in this application package have the meanings set forth below:

- a. "Basin-Wide Planning" means a comprehensive approach for the planned management of groundwater and surface water resources within a groundwater basin or sub-basin. This approach involves input, collaboration, and broad-based consensus among basin stakeholder groups, identifying and resolving related issues, impacts, and identifying specific projects and goals for the basin. Stakeholder groups include local and governmental agencies, Indian tribes, low-income and minority communities, water districts, and agricultural, environmental, and economic interests.
- b. "Bay-Delta" means the San Francisco Bay / Sacramento-San Joaquin Delta Estuary.
- c. "Bond Law" means the Safe Drinking Water, Clean Water, Watershed Protection and Flood Protection Act; Groundwater Recharge Facilities Program, under the Water Conservation Account, as set forth in Division 26, Chapter 8, Article 4 of the Water Code (commencing at Section 79161).
- d. "CALFED" refers to the consortium of state and federal agencies, including DWR, with management and regulatory responsibilities in the Bay-Delta.
- e. "CALFED Bay-Delta Program" means the undertaking by state and federal agencies pursuant to the Framework Agreement dated June 20, 1994, to develop a long-term solution to water management, environmental, and other problems in the Bay-Delta watershed by means of a programmatic environmental impact statement/environmental impact report.
- f. "DWR" means the California Department of Water Resources.
- g. "Eligible costs" means costs of groundwater recharge feasibility study or construction project that may be paid from funding made under the Bond Law. Funding awarded for construction of groundwater recharge projects pursuant to the Bond Law may be used for reasonable costs of engineering design, land and easement acquisition, legal fees, environmental mitigation, and construction of groundwater recharge facilities, including monitoring systems to assess project impacts. Funding awarded for feasibility studies of groundwater recharge projects, pursuant to the Bond Law, may be used for reasonable costs of engineering, geologic and hydrogeologic studies, and preparation of environmental documentation. Costs incurred prior to applying for or entering into a contract for funding, including preparation of the application to establish eligibility and costs for a feasibility study done to assist in the preparation of a construction loan application may, at DWR's discretion, be reimbursed from the loan or grant proceeds.

Costs that are not eligible for funding include:

- 1) Costs, other than those noted above, incurred prior to applying for or receiving funding,
- 2) Operation and maintenance costs,

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| <ul style="list-style-type: none"> <li>3) Purchase of equipment not an integral part of the project,</li> <li>4) Establishing a reserve fund,</li> <li>5) Purchase of water supplies,</li> <li>6) Replacement of existing funding sources for ongoing programs,</li> <li>7) Support of existing agency requirements and mandates,</li> <li>8) Purchase of land in excess of the minimum required acreage necessary to operate as an integral part of the project, as set forth and detailed by engineering and feasibility studies and</li> <li>9) Payment of principle or interest of existing indebtedness or any interest payments unless: <ul style="list-style-type: none"> <li>a) The debt is incurred after issuance of a letter of commitment of funds by DWR;</li> <li>b) The DWR agrees in writing to the eligibility of the costs for reimbursement before the debt is incurred; and</li> <li>c) The purposes for which the debt is incurred are otherwise eligible project costs.</li> </ul> </li> <li>h. "Engineering feasibility" means a determination by a civil engineer, registered to practice in California, that the proposed project can be designed, constructed and operated to accomplish the purposes for which it is planned, and that it is planned in accordance with generally accepted engineering and environmental principles and concepts. Hydrologic studies, information on water rights and the sufficiency of water supply are essential to the determination of engineering feasibility.</li> </ul> | <ul style="list-style-type: none"> <li>i. "Environmental documentation" means written documents prepared and filed in compliance with all applicable laws and guidelines related to the protection of the environment and resources of the State, including, but not limited to, California Environmental Quality Act, National Environmental Policy Act, the federal Clean Water Act, the California Fish and Game Code, and the California Endangered Species Act.</li> <li>j. "Feasibility study" means a study conducted for the purpose of determining the engineering, hydrogeologic, environmental, economic, institutional and financial feasibility of a proposed groundwater recharge project. Feasibility studies may include pilot projects. Feasibility study results should provide the information needed to develop a complete construction loan application.</li> </ul> <p>Feasibility studies must be project specific. General planning studies or reconnaissance level studies are not eligible since they do not have the objective of defining then determining the feasibility of a specific preferred project alternative involving construction or other capital outlay activities.</p> <li>k. "Financial feasibility" means a determination by DWR that the applicant can complete the construction project, or feasibility study, with the amount of funds requested in the funding application. If the project or feasibility study cannot be completed within the amount of the funding requested, but the applicant can establish, to DWR's satisfaction, that</li> |
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additional funds from other sources are available to complete the project or feasibility study, DWR may determine that the project or feasibility study is financially feasible. This determination will be contingent upon the applicant establishing to DWR's satisfaction, that it has the ability to repay all loans identified as additional sources of funds for completion of the project or feasibility study.

l. "Groundwater management program" means any formalized program or plan for management of groundwater within a groundwater basin or other specified geographic area.

m. "Groundwater recharge facilities" means lands and facilities for artificial groundwater recharge through methods that include, but are not limited to, either percolation basins, pits, ditches, and furrows, modified streambeds, flooding, and well injection. Expenditures may include: capital outlay expenditures to expand, renovate, restructure land and facilities used for the purposes of groundwater recharge and to acquire additional land for recharge basins. Groundwater recharge facilities may include any of the following:

1. Instream facilities for regulation of water levels, but not regulation of streamflow to accomplish diversion from the waterway.
2. Agency-owned facilities for extraction.
3. Conveyance facilities to convey water to the recharge site, including devices for flow regulation and measurement of recharge water.

Any part or all the project facilities, including the land under the facilities, may consist of separable features, or an appropriate share of multipurpose features, of a larger system, or both.

n. "Hydrogeologic feasibility" means a determination by a geologist or civil engineer, registered to practice in California, that operation of the proposed groundwater recharge project will result in increased storage of water in a groundwater basin that can be extracted for later use. The determination must include information on the availability of adequate aquifer storage and the capacity to extract groundwater at the rates and locations proposed. Information on aquifer properties, groundwater flow rates and directions, water balance of the basin, and water quality are essential to the determination of hydrogeologic feasibility.

o. "Intended project beneficiaries" are those intended in the identified project purposes.

p. "Local agency" means any city, county, city and county, district, joint powers authority, or other political subdivision of the State, or incorporated mutual water company.

q. "Need" means the urgency of need for the project, and the negative consequences if not implemented. Need is determined by the general state of the water system, current and future water supply and demand, dependency on the water supply, water quality conditions, availability of substitute supplies, and any negative impacts of current surface water and groundwater management.

r. "Non-market value" means a value that cannot be determined by observing transactions in the marketplace. Such values must be determined indirectly through techniques such as contingent valuation methods that present study subjects with hypothetical market situations.

- s. "Overdraft" means the condition of a groundwater basin in which the amount of water withdrawn by pumping exceeds the amount of water that recharges the basin over a period of years during which water supply conditions approximate average conditions.
- t. "Primary benefits" refers to those benefits directly accruing to the beneficiaries of an action such as farmers able to increase production due to a more reliable water supply. Those benefiting from added economic activity related to increased expenditures by the primary beneficiaries, such as suppliers of farm inputs like seed and fertilizer, realize secondary, not primary, benefits.
- u. "Third party" means a party who may be affected by the proposed project but is neither directly involved in the development of the project nor the intended beneficiary of that project, including a party who might purchase a project's water supply.



# *Appendix IX— Project Accomplishments*

Project accomplishments, Section G-5, is one of the ranking criteria. This appendix provides a detailed explanation of the information that should be provided to document expected project accomplishments.

## **G-5a Quantifiable accomplishments**

Provide a detailed accounting of expected quantifiable accomplishments for the proposed project.

An expected project accomplishment, such as yield or reliability enhancement, occurs when an action or an activity causes the net value of the beneficial use of water to be increased. This increase can occur because of a decrease in the costs associated with the use of that water (e.g., reduced acquisition, pumping, and/or treatment costs), an increase in the value generated by the use of that water (e.g., increased urban, agricultural, or environmental water supply reliability), or both. In addition, this increase in values need not be associated only with adding to the availability of system-wide supply; it may arise either from an intentional change in the place and/or time of use of water (e.g., water transfers either to augment instream flows for fish habitat enhancement or to increase reliability for urban or agricultural users) or an incidental change which generates benefits associated with specific uses. As an example, incidental streamflow quantity and/or timing changes associated with a groundwater recharge project that are not an identified purpose of that project but which can be assigned fishery habitat or urban water quality benefits would be an example of an incidental benefit.

Benefits may accrue only to the intended project beneficiaries, including purchasers of marketed supplies developed by the project, or they may also accrue to third parties, including indirect environmental benefits. This ranking criterion is designed to evaluate economic justification beyond that directly associated with the parties participating in the proposed project, either as the project builder or as a purchaser of any developed supply. The local cost and benefit evaluation approach provided for in Appendix IX, G-5a(1) should be used to quantify project costs and project benefits to the parties directly participating in the proposed project.

For the purposes of calculating the value of project accomplishments to third parties, the preferred approach is to use avoided costs whenever appropriate. For example, for the fish habitat benefits of improvements in water quality, the avoided costs of alternative actions to achieve that level of quality should be used as benefits for the recalculation. This valuation method is appropriate only if it is reasonable to assume that the identified alternative(s) would indeed be used if the proposed project did not provide the claimed water quality improvement. Other non-market economic valuation methods are also available (such as travel cost, hedonic pricing and contingent valuation) as well as benefit transfers; however these are considerably more difficult - and controversial - to use.

When economic values cannot be assigned to expected project accomplishments, either because accepted methods of economic valuation are not available or the applicant has not done the necessary research, expected

project accomplishments should be quantified in physical terms for this ranking criterion. Estimates of increases in streamflow volume due the project at a time of year when those flows would be important to fish habitat enhancement should be provided, for example.

The discussion of the project accomplishments should address each of the following issues as they apply:

- a. Magnitude of the actual increase in water supply yield and reliability compared to pre-existing conditions
- b. Availability of the storage for conserved water
- c. Expected to reduction of dry-year demand for surface water under existing contracts

Describe how the proposed groundwater storage project will reduce dry-year demand for surface water under existing contracts. The information should include:

- 1) Predictions of dry-year groundwater yield resulting from the storage of surface water
- 2) Predictions of the extent and magnitude of water table fluctuations during dry-year extractions
- 3) Predictions of water quality impacts during dry-year extraction.

- d. Need for the project

Describe the current water system conditions. Describe the agency's current sources of water, including substitute supplies and existing facilities. Describe how the proposed groundwater recharge project will help meet those needs.

Provide a detailed narrative description of the expected impacts within the community if the proposed groundwater storage project is not constructed. Factors impacted could include population, employment, business and industry, irrigated acreage, emergency supplies, water quality, agency loss or gain of revenue, public safety, agricultural conversion to urban water uses, and the environment.

- e. Potential to reduce critically overdrafted conditions

Proposed projects that demonstrate the greatest potential to reduce critically overdrafted conditions shall be given preference in the evaluation of project accomplishments. The applicant shall provide a detailed narrative description of existing groundwater overdraft conditions, and explain how the proposed project will achieve this project accomplishment.

- f. Potential reduction in saline water intrusion

- g. Existence of recovery system for stored water or an agreement with DWR or a local agency for the installation of that system

Describe the system that will be used to recover and convey the stored water. Indicate existing or proposed recovery facilities. Explain how any proposed facilities will be constructed in a timely manner. The description should include detailed information on the following:

- 1) number and location of extraction wells
- 2) construction details for the extraction wells
- 3) proposed operating parameters for the extraction wells, including aver-

age and maximum pumping rates and pumping schedule

- 4) distribution system details, including the size, capacity, location, and construction details for all conveyance features.

#### Mark as Attachment G-5a.

##### G-5a(1) Local accomplishments

This section requires the enumeration of the economic benefits accruing to those parties directly involved in the project, including purchasers of market supplies developed by the project. For convenience, provision is made for enumerating economic cost information in this section. Tables 1 through 7 in Appendix III are used for this enumeration. Although not used for this ranking criterion, the cost information provided will be used for the cost effectiveness criterion (G-6).

Table 1 summarizes the project's performance (total average annual direct recharge, in-lieu recharge, total recharge; extractions and net recharge); Tables 2 through 4 summarize the project's capital and operations and maintenance (O&M) costs; Table 5 computes the project's water supply benefits using three possible methods; Table 6 computes lift benefits; and Table 7 computes avoided pumping costs for the in-lieu recharge.

##### G-5a(1)(i) Analysis assumptions

Applicants must use the following assumptions in determining the benefits and costs for the proposed project:

- **Period of analysis.** The economic evaluation will be based on a 50-year analysis period.
- **Inflation and escalation.** For ease of analysis, applicants will assume zero future inflation and escalation of costs.

- **Discount rate.** Because benefits and costs are evaluated over a 50-year period, they must be discounted to reflect the value of money over time (a dollar received today is worth more than one received in the future). DWR uses a 6 percent discount rate.
- **Dollar value base year.** All benefits and costs will be expressed in current year dollars (please indicate year). If dollar estimates are only available for prior years, the following table can be used to update these costs to year 2000 estimated price levels using the Implicit Gross Domestic Product Price Deflator (IDP.) The following table shows the IDP for the years 1980 through 2000. Using the update factor of 1.25 obtained from this table, \$1,000 reported in 1990 dollars would be equivalent to \$1,250 in year 2000 dollars. If you need to update from years preceding 1980 or to years following 2000, please contact Linda Buchanan Herzberg at (916) 327-1663 to obtain the needed update factors.
- **Multiple-funded projects.** The economic analysis will be conducted for the entire project, regardless of funding sources. All project costs (capital and O&M) must be included in the economic analysis, even if the applicant-requested loan only funds part of the project.
- **Groundwater recharge project/basin characteristic.** Several simplifying assumptions are made concerning the physical characteristics of the recharge project as it relates to the groundwater basin. These include: (a) recharge results in a water table rise in the year that water is placed in the recharge facility; (b) recharge is evenly distributed and remains in the local agency's boundaries, or project groundwater basin, whichever is smaller; and (c) the aquifer's storage coefficient is homogenous within the project groundwater basin.

- Following are instructions for completing Tables 1 through 7 in Appendix III. These tables assume that the project's benefits and costs are relatively constant from one year to the next over the analysis period.

#### **G-5a(1)(ii) Project performance**

Table 1 shows the expected total average annual water direct recharge; in lieu recharge, total recharge, extractions and net recharge to be realized from the project. These numbers should match the information developed for the Engineering and Hydrogeologic Feasibility Section.

**Mark the table as Attachment G-5a(1)(ii).**

#### **G-5a(1)(iii) Project costs**

Project costs usually include capital (construction) and annual operation and maintenance (O&M) costs. Although some project costs are not fundable under this program, all costs required to achieve project benefits must be included in the economic evaluation. If the project consists of multiple components, include all of them in the project budget.

Table 2 shows the capital costs required to plan and construct the project. Although capital costs can be spread over more than one year, Table 2 assumes that all capital costs are incurred in one year. In Table 2, enter costs for the following categories in column (b):

- Land Purchase/Easement
- Planning/Design/Engineering
- Materials/Installation
- Structures
- Equipment Purchases/ Rentals
- Environmental Mitigation/Enhancement
- Construction/ Administration/Overhead
- Project/Legal/License Fees
- Other

<b>Year</b>	<b>IDP<sup>2</sup></b>	<b>Factor</b>
1980	55.1	1.93
1981	60.7	1.75
1982	65.0	1.63
1983	68.0	1.56
1984	70.6	1.50
1985	73.0	1.45
1986	74.7	1.42
1987	76.7	1.38
1988	79.0	1.34
1989	82.2	1.29
1990	85.2	1.25
1991	88.8	1.20
1992	91.2	1.16
1993	93.3	1.14
1994	95.3	1.11
1995	97.5	1.09
1996	99.4	1.07
1997	101.3	1.05
1998	102.6	1.03
1999	104.1	1.02
2000	106.1	1.00

<sup>2</sup> Source: Department of Commerce,  
Bureau of Economic Analysis

Table 2 includes allowances for a 15 percent contingency cost to be computed in column (d) for each of the above categories. Capital costs and associated contingency costs are added together in column (e); column (e) is then summed to a total near the bottom of the table. This total must match the Project Budget prepared in Section A-3.



**NOTE:** Table 2 excludes financial costs, such as interest costs during construction and long-term debt service costs.

Table 3 summarizes annual operations and maintenance costs incurred once the project begins operations. These may include administration, column (a); operations, column (b); maintenance, column (c); water purchases, column (d); extraction, whether incurred by the local agency or private individuals, column (e); and "other" costs, column (f). If a major component of the project requires replacement before the end of the 50-year analysis period, then annual replacement costs should be included in the "other" category. Column (g) computes total annual O&M costs, which is then multiplied by the factor of 15.7 to obtain total discounted O&M costs over the analysis period, column (h).

Table 4 computes the total discounted costs of the project over the analysis period by combining capital costs, column (a), with the total discounted O&M costs, column (b), and placing the sum into column (c).

The primary types of benefits associated with groundwater recharge projects are water supply, lift, and avoided pumping costs (the latter is limited to in lieu projects only). Typically, water supply benefits are the greatest of these benefits.

Water supply benefits occur when recharged supplies are extracted and put to beneficial use. Water supply benefits are computed in Table 5. The value of the project's water supply is determined by how the water will be used. If the applicant has enough water supplies for the foreseeable future, then the water delivered by the project will allow that agency to reduce the amount of water purchased, diverted, or pumped from its most expensive current water supply source. However, if the applicant needs to augment

water supplies to meet future demands, then the value to the water agency is measured by the least-cost alternative that may be eliminated or delayed because of the project. Finally, if the applicant plans to sell all or part of the project water to existing customers, new customers, or other agencies, then the value of the project water can be measured by the expected price for which it is sold, thus generating revenue.

Tables 5a, 5b, and 5c allow the applicant to compute three types of water supply benefits that might result from the project. From these three types of water supply benefits (listed below), the applicant will need to determine the one that is most appropriate for the proposed project.

Table 5a-For applicants with sufficient water supplies, Table 5a is completed by showing the current major sources of supply available to the agency, column (a), along with the cost/acre-feet of obtaining water from these sources, column (b). The most expensive source(s) are then chosen as the benefit measure, as these will be likely sources from which supplies will be reduced as a result of the project.

Table 5b-For applicants needing to augment current supplies, Table 5b is completed to identify the least-cost alternative that may be delayed or eliminated as a result of the project. The name of the alternative(s) is entered into column (a), and its associated capital costs are entered into column (b). Column (b) is multiplied by the capital recovery factor in column (c) to obtain annual capital costs, column (d), to which are added annual O&M costs, column (e), to obtain total annual costs, column (f). Dividing the total annual costs by the total annual supply in column (g) results in the annual cost/acre-feet for the alternative(s) in column (h).

Table 5c-Finally, if the applicant plans on selling all or part of the conserved water supply, Table 5c is used; column (a) lists the parties that may be potentially buying project supplies, column (b) lists the amount of water to be sold to each, and column (c) shows the projected selling price. However, depending upon hydrologic conditions, it is very likely that these water sales may not occur every year over the analysis period, in column (d), enter the expected frequency of sales as a percentage. For example, if sales are only expected to occur about half of the years, then .50 is entered in column (d). This percentage is then used to "adjust" the selling price in column (e) to obtain actual sales revenue \$/acre-feet. (In reality, the selling price is not changing. However, a mathematical "adjustment" is required to account for sales not occurring every year.)

If the applicant is likely to receive an "option fee" from a purchasing agency, then this is shown in column (f). (An option fee is sometimes paid by a contracting agency to a selling agency to maintain the right of the contracting agency to buy water whenever needed. Although the water may not be purchased every year, the fee is usually paid every year.) The option fee is then added to the actual sales revenue to obtain the final expected revenue (\$/acre-feet) that can be realized from selling the water, column (g).

Table 5d computes a total discounted water benefit (and avoided well deepening costs) accruing to all pumpers in the project area affected by the recharge project. Lift benefits can be claimed if recharged water remains underground after the quantities claimed for water supply benefits are extracted (in other words, the project results in a positive net recharge). As extraction increases, lift benefits decrease.

Table 6 computes the total discounted lift benefits, assuming that a project's cumulative recharge increases by the average annual net recharge (from Table 1) each year of the 50-year analysis period. Some recharge projects are operated so that the cumulative net recharge is zero for the 50th year. For these specific projects, Table 6 would yield a lift benefit of zero. For applicants wishing to compute lift benefits on a year-by-year basis, then the "long form" tables discussed above should be used.

Information needed to complete Table 6 includes:

- Average annual net recharge, obtained from Table 1,
- The area overlying the project's groundwater basin or geographic area,
- Pumping costs, or the cost of pumping 1 acre-foot of water over 1 foot of head, and
- the volume pumped by all pumpers in the area cited above excluding those that will be receiving in-lieu deliveries from the project.

Avoided pumping costs can occur if current users of groundwater will receive in-lieu surface supplies from the project, thereby eliminating them as groundwater users. If this occurs, then these users will avoid having to pay groundwater pumping costs.

Table 7 computes the total discounted avoided pumping costs over the analysis period. Information needed to complete Table 7 includes:

- average annual in-lieu recharge, obtained from Table 1,
- depth to groundwater (use a representative depth to groundwater within the projected area), and pumping costs, or the cost of pumping 1 acre-foot of water over 1 foot of head.

**Mark the tables as Attachment G-5a(1)(iii).**

**G-5a(2) Non-local accomplishments**

Report any quantifiable project accomplishments that accrue to parties not directly participating in the proposed project as beneficiaries but which may be affected by hydrologic changes related to project implementation (e.g., streamflow, water quality) anywhere in the system.

**Mark as Attachments G-5a(2).**

**G-5b Non-quantifiable accomplishments**

Any expected project accomplishments that cannot be assigned a numerical value, either in dollars or in specific physical quantities, should be described as completely as possible.

**Mark as Attachment G-5b.**